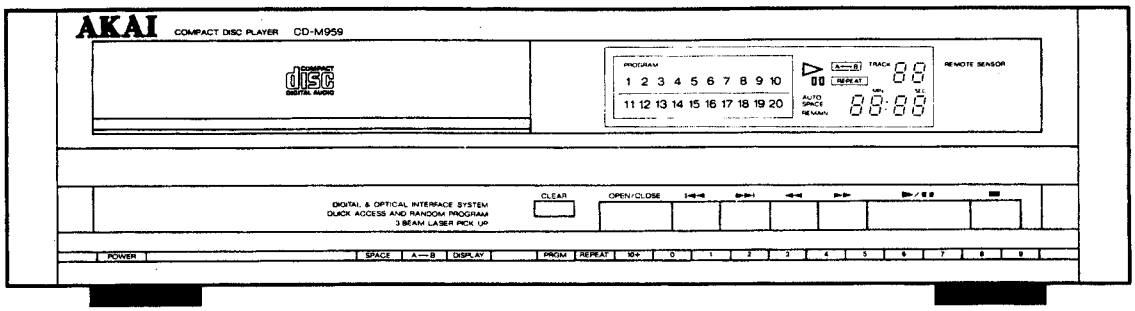
V04950

AKAI SERVICE MANUAL



COMPACT DISC PLAYER

MODEL CD-M959

COMPACT disc DIGITAL AUDIO

SPECIFICATIONS

Pick-up system	3 Beam laser pick-up
Error correction system	Cross interleave reed solomom
Number of chnnels	2 channel stereo
Wow & flutter	Less than measurable limits
Output level	
Optical	- 22dBm
Power requirements	220 V, 50 Hz for Europe except UK 240 V, 50 Hz for UK and Australia
Dimensions	385 (W) × 95 (H) × 341 (D) mm (15.2 × 3.7 × 13.4 inches)
Weight	4.9 kg (10.8 lbs)

Standard accessories

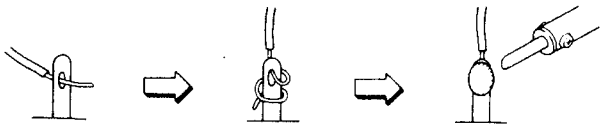
Optical fiber cable	× 1
Synchro cord	× 1
Operator's Manual	× 1

*** For improvement purposes, specifications and design are subjected to change without notice.**

★SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVING

1. Parts identified by the ⚠ (*) symbol parts are critical for safety. Replace only with parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.
   These must also be replaced only with specified replacements.
   Examples: RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers (Insulating Barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable)
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap ends of wires securely about the terminals before soldering.



6. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Use care that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SAFETY CHECK AFTER SERVICING

After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit.
The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal,microphone jacks, signal-input/output connectors, etc.) and the earth ground through a resister of 1500 ohms paralleled with a 0.15 μF capacitor, under the unit's normal working conditions. The leakage-current should be lees than 0.5 mA rms AC.
The resistance measurment should be done between accessible exposed metal parts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2 Mohms.

★INFORMATION

SYMBOLS FOR PRIMARY DESTINATION

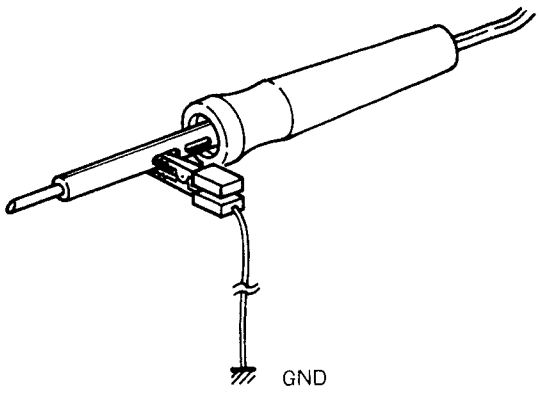
Alphabet indicates the destination of the units as listed below.

Symbols	Principal Destinations
A	USA
B	UK
C	Canada
E	Europe (except UK)
J	Japan
S	Australia
V	W. Germany only
U	Universal Area
Y*	Custom version

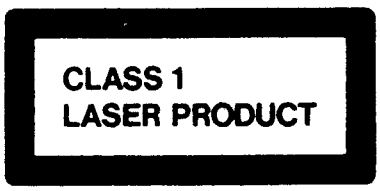
PRECATIONS IN REPAIRING

When repairing or adjusting the unit, please note the following points.

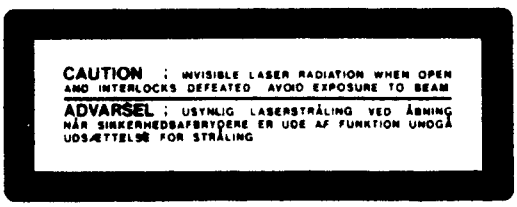
1. Do not put excessive pressure on the mechanical part (operation part), including the pick-up block, as extremely high mechanical precision is required in these parts.
2. When the mechanical part or P.C. Board is removed for repair or adjustment, make sure that there are no metal objects in the narrow gap between the P.C. Board or the mecha parts and the base.
3. The micro-computer and the CD signal processing IC's can be damaged by static electricity or leakage from a soldering iron during repairing. While soldering, please take the precautions against leakage as in the illustration below.
4. Do not loosen any screws in the pick-up block. When handling the Pick-up block, please refer to the points to NOTE when replacing the pick-up block.
5. Keep safety from hazardous invisible laser radiation, DO NOT watch the laser beam (objective lens) directly.
6. Modes for the some countries, laser warning labels are affixed on the unit and inside of the unit, as shown below. Read it carefully for your safety, when replacing or adjusting the unit.



[DENMARK, UK, USA]

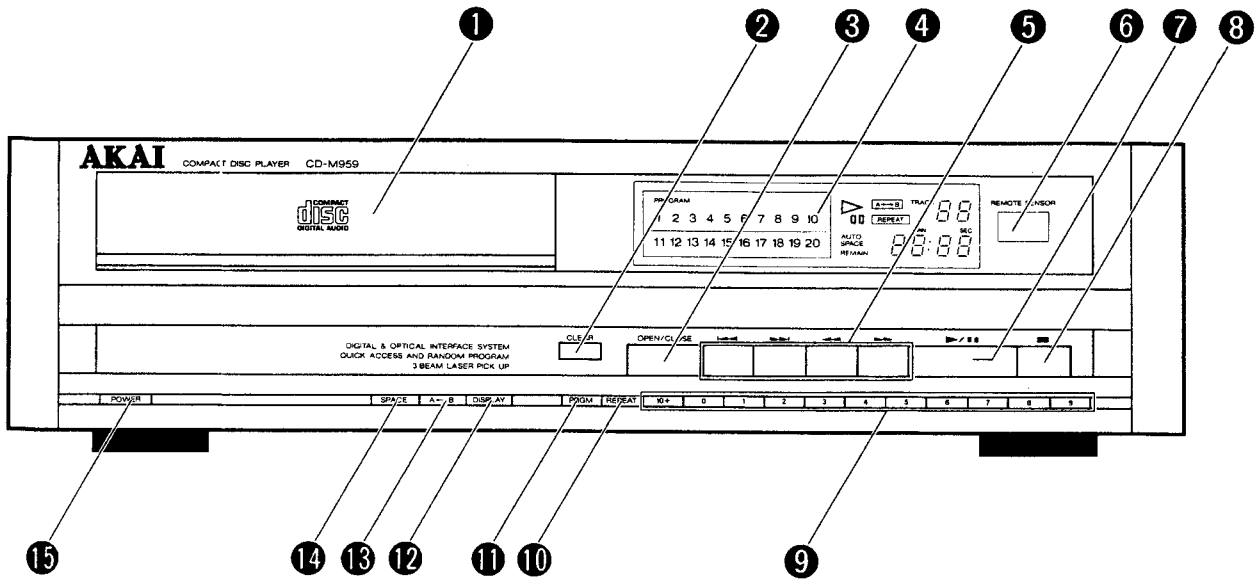


A Label affixed on the unit


CAUTION : INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED AVOID EXPOSURE TO BEAM
ADVARSEL : USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING

A1 A Label affixed inside of the unit

I. CONTLOLS



❶ Disc Drawer
Load a compact disc here.

❷ CLEAR Button
To cancel all the programmed tracks of the random program or to cancel A ⟷ B repeat playback.

❸ OPEN/CLOSE Button
To open and close the disc drawer.

❹ FL (Fluorescent) Display
Tells you what the CD player is doing.

❺ ⏮ / ⏭ and ◀◀ / ▶▶ Search Buttons
◀◀ / ▶▶ Buttons
For manual search during playback.
⏮ / ⏭ Buttons
To skip tracks during playback.

❻ REMOTE SENSOR Window
For reception of the remote control signal.
Keep away from strong light and direct sunlight as this will interfere with the remote control function.

❼ ▶ / ▮▮ (Play/Pause) Button
To start and stop playback temporarily.

❽ ■ (Stop) Button
To stop playback.

❾ Numeric Buttons (10+ and 0 to 9)
For direct search of the track you wish to playback and for programming for random program playback.

❿ REPEAT Button
For repeat playback of all the tracks or the random program.

⓫ PRGM (Program) Button
For random program playback.

⓬ DISPLAY Button
To switch between the remaining playback time display and the elapsed playback time display.

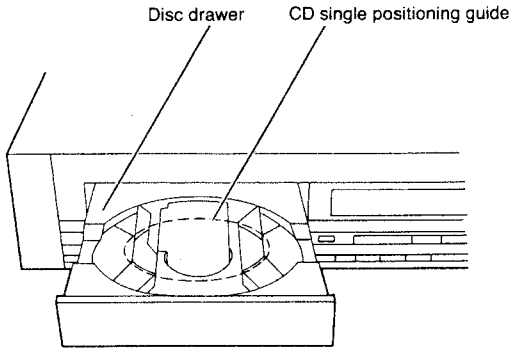
⓭ A ⟷ B Button
For repeat playback of a specific section of the CD.

⓮ SPACE Button
To set the blank intervals between tracks to a specific time (approximately 4 seconds) for uniformity during random program playback.

⓯ POWER Button
To turn the power on and off.

About the disc drawer

The disc drawer of this CD player is capable of holding a CD single (8cm diameter CD) for playback.
Place the CD single on the center of the disc drawer as shown in the following illustration.



FL (Fluorescent) Display

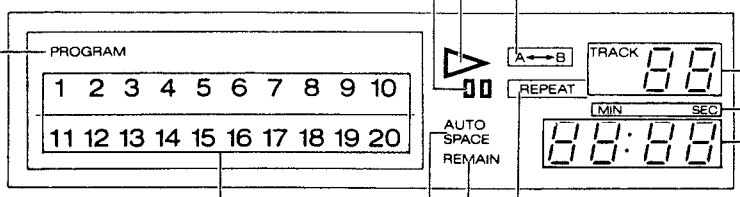
Play Indicator
Tells you the CD player is in the playback mode.

PROGRAM Indicator
Tells you the random program system is engaged.

A ⟷ B Indicator
Tells you the CD player is in the A ⟷ B (2 point) repeat playback mode.

Pause Indicator
Tells you the CD player is in the pause mode.

TRACK Display
Tells you which track is being played back or which track has been selected.



Music Calendar Display (1 to 20)
Displays all tracks contained on the loaded CD. Also displays the programmed tracks during random program playback.

REPEAT Indicator
Tells you the CD player is in the repeat playback mode.

Digital Display
Shows elapsed playback time, remaining time or index number during index search playback.

AUTO SPACE Indicator
Tells you the CD player is in the auto space playback mode.

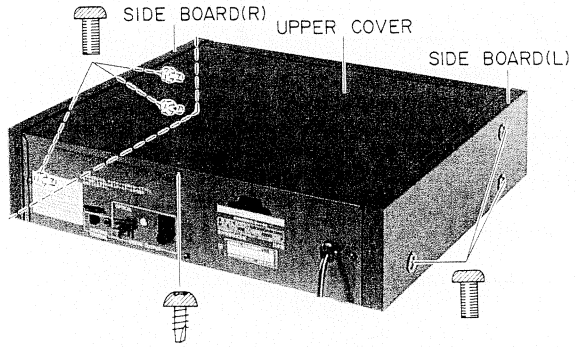
MIN and SEC Indicators
Displays minutes and seconds of the remaining playback time or elapsed time of playback.

REMAIN (Remaining) Indicator
Tells you the remaining playback time of the loaded CD.

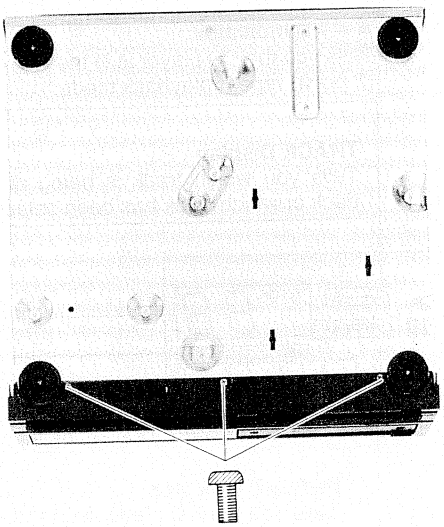
II. DISASSEMBLY

In case of trouble, etc. necessitating dismaintling, please dismantle in the order shown in the photographs. Reassemblein reverse order.

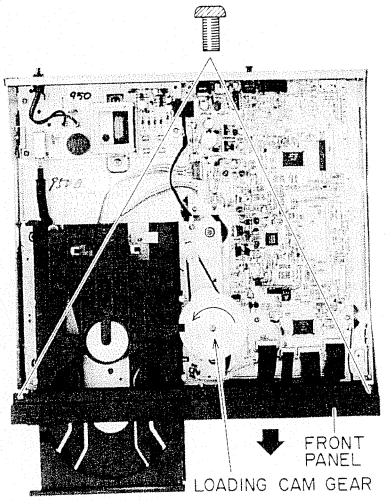
1. Removal of SIDE BOARDS and UPPER COVER



2. Removal of FRONT PANEL

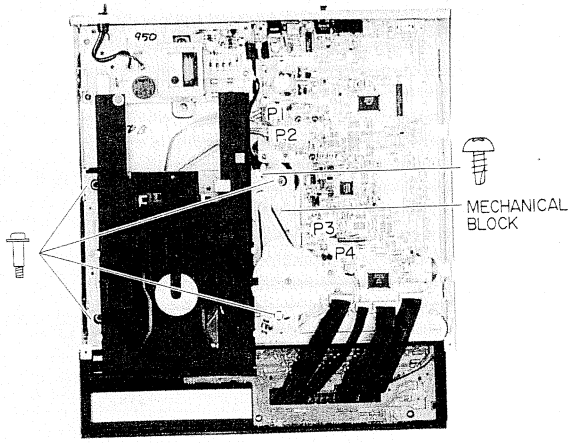


3.



* Befor removing the FRONT PANEL,turn the LOADING CAM GEAR to counter clockwise and open the disk tray a little.

4. Removal of Mecha Block



* See NOTE
Remove the fixing screws and connectors P1 to P3 and P4.

* Note.
When disconnecting or connecting the connectors P1 and P2, make sure that the circuit of the P.C. Board on the PICK-UP BLOCK has to be shorted. (Refer to IV. 4-1 PRECAUTION)

III. PRINCIPAL PARTS LOCATION

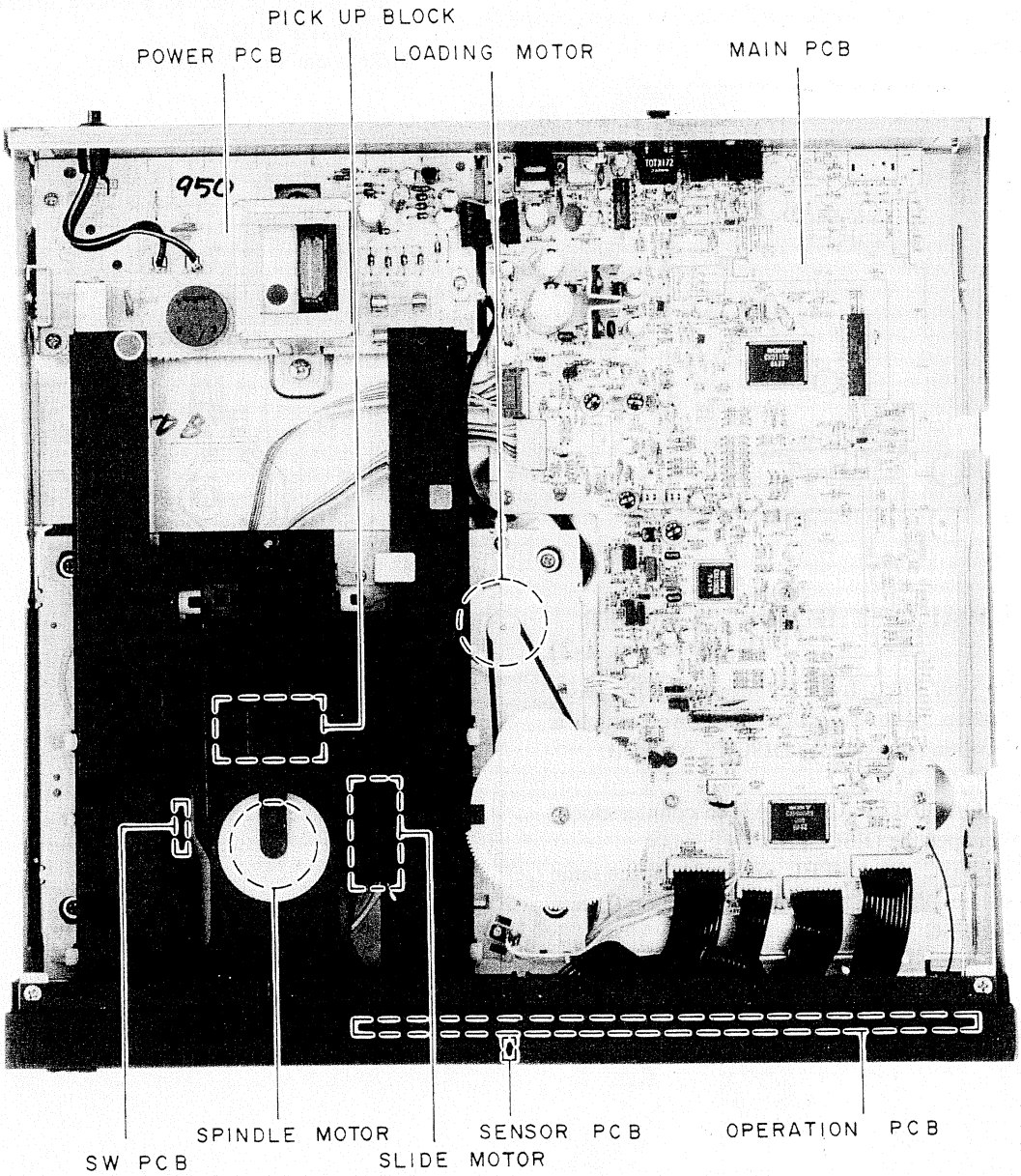


Fig. 3-1

IV. REPLACEMENT OF PRINCIPAL PARTS

4-1. PRECAUTION, WHEN REPLACING THE PICK-UP BLOCK

When connecting or disconnecting the connectors, the circuit of the P.C. Board on the Pick-Up Block has to be shorted by solder as shown Fig. 4-1.
After connecting the connectors, resolder from the circuit. Do not turn the electricity "ON" while it remains shorted-circuited.

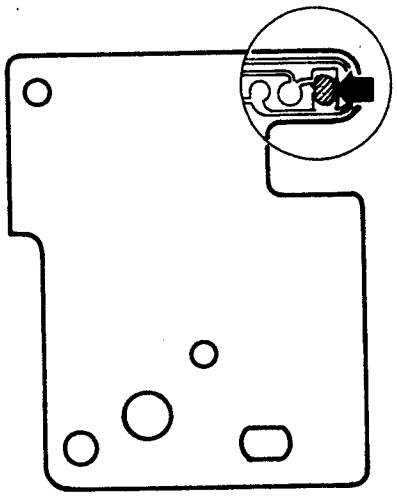


Fig. 4-1

4-2. REMOVAL OF THE DISC CLAMPER (Refer to Fig. 4-2)

NOTE : Keep your safety from hazadous invisible Laser Radiation. Make sure that the Power switch is OFF,when removing the DISC CLAMPER.

1) Turn the LOADING CAM GEAR to counter-clockwise①, then open the DISC TRAY.
2) Pull up the DISC CLAMPER slightly ②, at the same time move the DISC CLAMPER ← direction③, then remove the DISC CLAMPER.

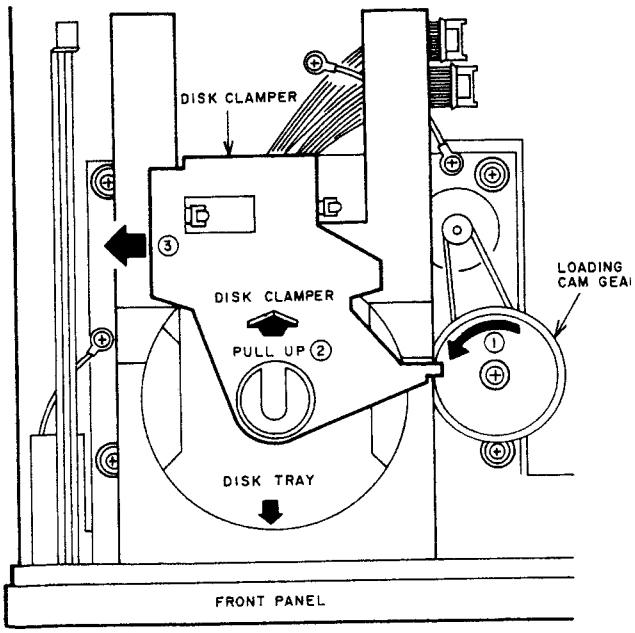


Fig. 4-2

4-3. REMOVAL OF THE PICK-UP BLOCK (Refer to Fig. 4-3)

1) Open the DISC TRAY and disconnect the connectors on the PICK-UP BLOCK. (See 4-1 PRECAUTION.)
2) Push the Ⓐ part in a ← direction, at the same time push the Ⓑ part of shaft in a ← direction, then remove the PICK-UP BLOCK.
3) Reassemble in reverse order.

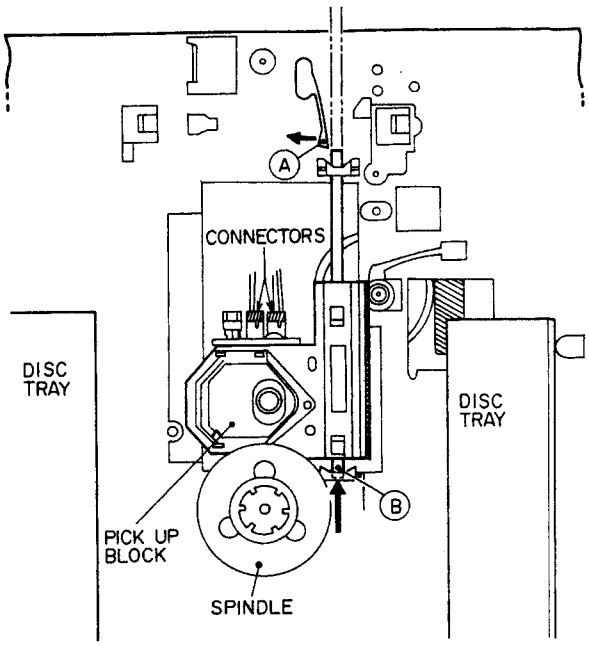


Fig. 4-3

IV. REPLACEMENT OF PRINCIPAL PARTS

4-1. PRECAUTION, WHEN REPLACING THE PICK-UP BLOCK

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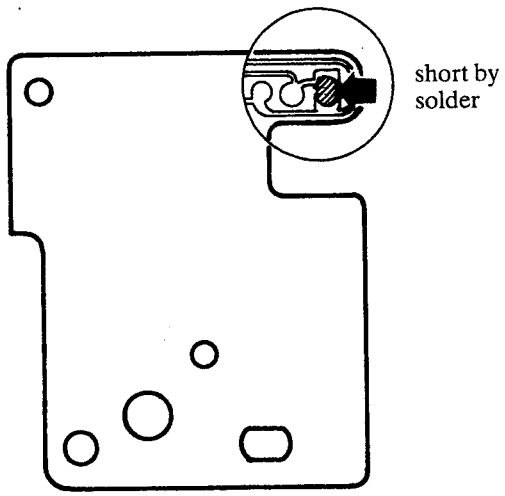

Fig. 4-1

4-2. REMOVAL OF THE DISC CLAMPER (Refer to Fig. 4-2)

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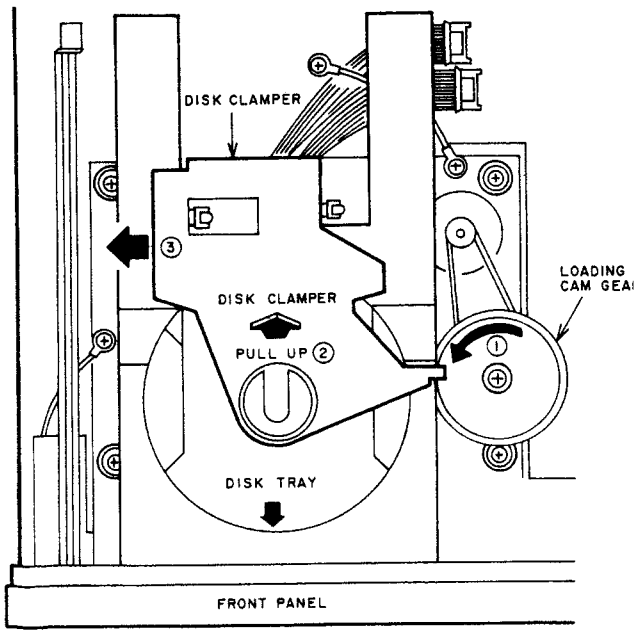

Fig. 4-2

4-3. REMOVAL OF THE PICK-UP BLOCK (Refer to Fig. 4-3)

1) Open the DISC TRAY and disconnect the connectors on the PICK-UP BLOCK. (See 4-1 PRECAUTION.)
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3) Reassemble in reverse order.

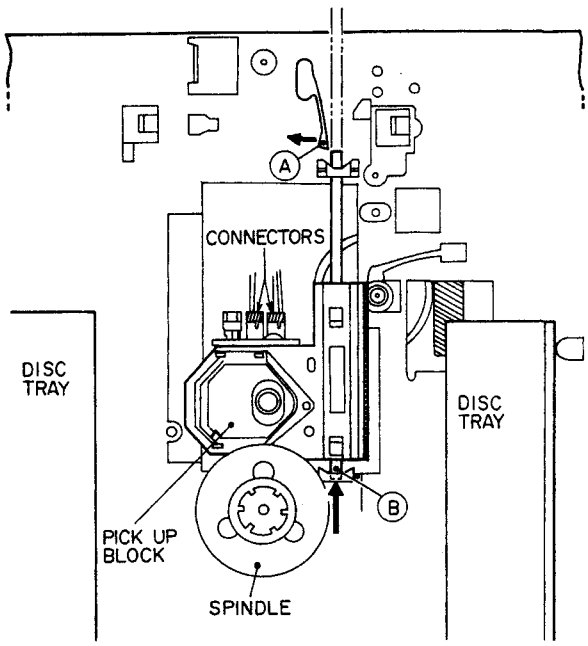

Fig. 4-3

IV. REPLACEMENT OF PRINCIPAL PARTS

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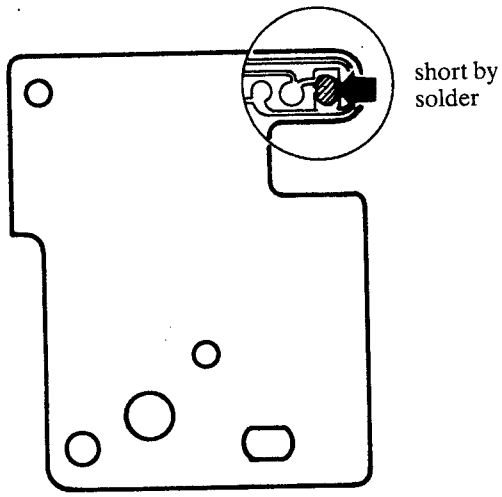

Fig. 4-1

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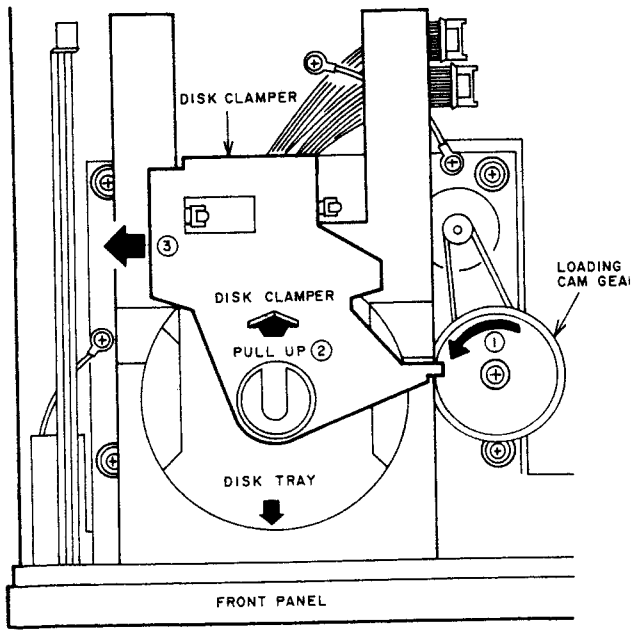


Fig. 4-2

4-3. REMOVAL OF THE PICK-UP BLOCK (Refer to Fig. 4-3)

1) Open the DISC TRAY and disconnect the connectors on the PICK-UP BLOCK. (See 4-1 PRECAUTION.)
2) Push the Ⓐ part in a ← direction, at the same time push the Ⓑ part of shaft in a ← direction, then remove the PICK-UP BLOCK.
3) Reassemble in reverse order.

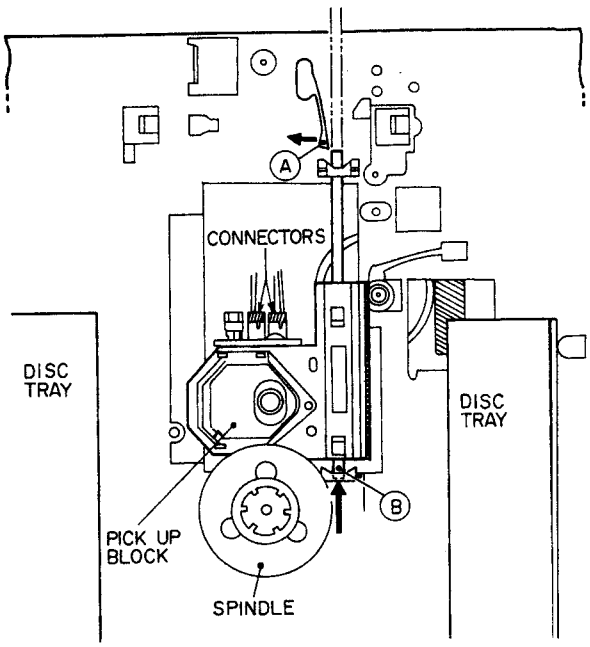


Fig. 4-3

4-4. REPLACEMENT OF THE LOADING MOTOR

1) Remove the LOADING BELT from LOADING MOTOR.
2) Extend motor holders Ⓒ, at the same time, push the LOADING MOTOR from pulley side, then remove the LOADING MOTOR. (Fig. 4-4)
3) Reassemble, just push in the LOADING MOTOR.

4-5. REPLACEMENT OF THE SLIDE MOTOR

1) Turn the MOTOR LOCK LEVER Ⓑ clockwise.
2) Pull out the SLIDE MOTOR. (Fig. 4-4)
3) Reassemble in reverse order.

4-6. REPLACEMENT OF THE SPINDLE MOTOR

1) Turn the GEAR HOLD LEVER Ⓐ counterclockwise,then Pull out the SLIDE GEAR. (Fig.4-4)
2) Move the pick-up block to opposite from the SPINDLE MOTOR.
3) Remove two fixation screws of the SPINDLE MOTOR thruogh the hole on the TURNTABLE as shown Fig 4-5.
4) Reassemble in reverse order.

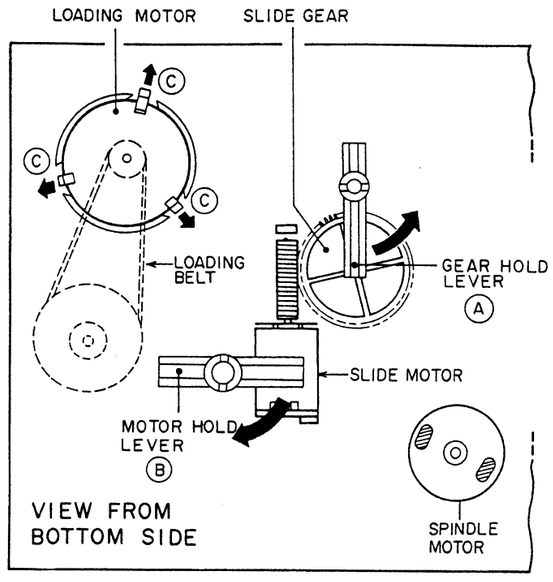


Fig. 4-4

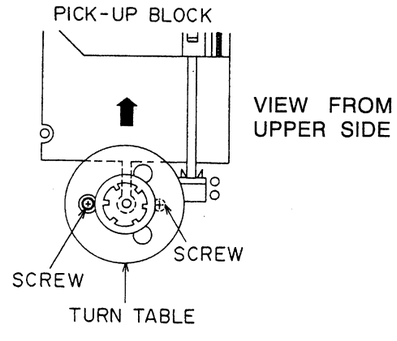


Fig. 4.5

V. ELECTRICAL ADJUSTMENT (SERVO)

ABOUT THE TEST MODE

- This test mode is used for the adjustment or check.
- Turn on the power while pressing the 0, 1 and 2 button on the FRONT PANEL, then machine is set to the TEST MODE.
- Indication of the DISPLAY on the FRONT PANEL is "0 ES:-0" when TEST MODE.
- When change the TEST MODE number, press the ▶▶| button on the FRONT PANEL.
- When press the STOP button ,TEST MODE number retrn to "0 ES:-0".
- When release from test mode, turn the power off.

TEST MODE OPERATION, DISPLAY AND FUNCTION

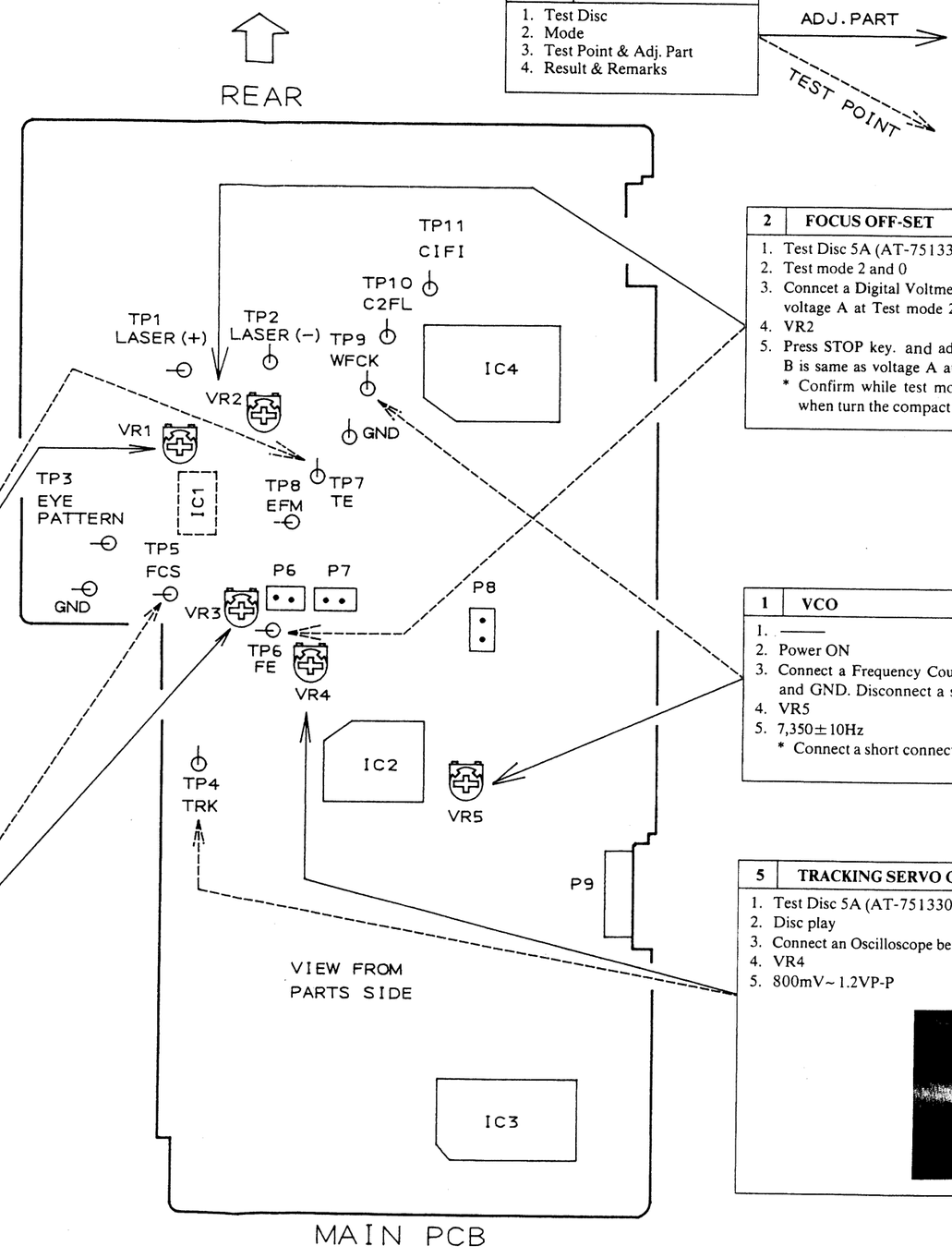
OPERATION	DISPLAY	FUNCTION
POWER OR STOP	0 ES:-0	LASER OFF ALL SERVO OFF
FS ▶▶|	1 ES:-1	LASER ON
FS ▶▶|	2 ES:-2	FOCUS SERVO ON
FS ▶▶|	3 ES:-3	*SPINDLE MOTOR ON AUDIO MUTE OFF
FS ▶▶|	4 ES:-4	TRACKING SERVO ON SLIDE SERVO ON

* This function activated only Focus ok (Focus servo ok)

STEP	ADJUSTMENT ITEM
1.	Test Disc
2.	Mode
3.	Test Point & Adj. Part
4.	Result & Remarks

ADJ. PART

TEST POINT



2 FOCUS OFF-SET

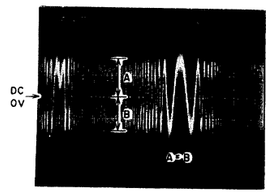
1. Test Disc 5A (AT-751330)
2. Test mode 2 and 0
3. Conncet a Digital Voltmeter between TP6 (FE) and GND. Check the voltage A at Test mode 2.
4. VR2
5. Press STOP key. and adjust voltage B by VR2, so that the voltage B is same as voltage A at Test mode 0.
   * Confirm while test mode 2. Creaky noise from pick up, when turn the compact disc by finger.

1 VCO

1. ——
2. Power ON
3. Connect a Frequency Counter between TP9 (WFCK) and GND. Disconnect a short connector P 8 .
4. VR5
5. 7,350± 10Hz
   * Connect a short connector P 8 after this adjustment.

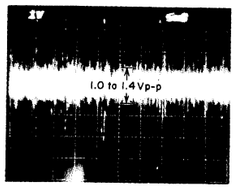
3 E-F BALANCE

1. Test Disc 5A (AT-751330)
2. Test mode 3.
3. Connect an Oscilloscope between TP7 (TE) and GND.
4. VR1
5. A = B (DC Range)



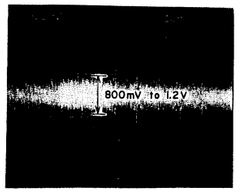
4 FOCUS SERVO GAIN

1. Test Disc 5A (AT-751330)
2. Disc play.
3. Connect an Oscilloscope between TP5 (FCS) and GND.
4. VR3
5. 1.0V ~ 1.4VP-P



5 TRACKING SERVO GAIN

1. Test Disc 5A (AT-751330)
2. Disc play
3. Connect an Oscilloscope between TP4 (TRK) and GND.
4. VR4
5. 800mV~ 1.2VP-P



VI. PARTS LIST

ATTENTION

1. When placing an order for parts, be sure to list Part No., Model No. and the description of eachpart. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.
2. Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.
3. Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. The Recommended Spare Parts List shows those parts in the Parts List which are considered particularly important for service.
3. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
4. How to read the Parts List.
   a) Mechanism Block

2. HEAD BASE BLOCK

REF. NO.	PART NO.	DESCRIPTION
1	BH-T2023A320A	HEAD BASE BLOCK
2	HP-H2206A010A	HEAD R/P PR4-8FU C
3	ZS-477876	PAN20×03STL CMT
4	ZS-536488	BID20×08STL CMT
5	ZG-402895	SP CS ANGLE ADJUST

SP (Service Parts) Classification

This number corresponds with the individual parts index number in that figure.

   b) PC Board

6. MAIN PC BOARD

REF. NO.	PART NO.	DESCRIPTION
IC1	EI-324536	IC HD14049BP
IC2	EI-336801	IC MB8841-564M
C1A	EC-338399	C MMY V 223M 250AC [U,E,B,S]
C1B	EC-350949	C MMY V 223M 250DC [J]
C1C	EC-338397	C MMY V 223M 125AC [C,A]
X1	EI-318384	OSC X'TAL NC-18C

Symbols for primary destination

[A] : AAL (U.S.A)
[B] : BEAB (England)
[C] : CSA (Canada)
[E] : CEE (Europe)
[J] : JPN (Janan)
[S] : SAA (Australia)
[U] : U/T (Universa Area)
[V] : VDE (W. Germany)
[Y] : Custom Version

SP (Service Parts) Classification

These reference symbols correspond with component symbols in the Schematic Diagrams.

   The available PC Board Blocks are listed separately.
5. When Part No. is known, Parts Index at end of Parts List can be used to locate where that part is shown in Parts List by its Reference No.listed at right of Part No.

WARNING

⚠(*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠(*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT.

1. RECOMMENDED SPARE PARTS

We suggest you to stock the following Recommended Spare Part items listed below since they can cover most of the routine service.

Ref. No.	Part No.	Description
1	BM-B328441	SC MOTOR LOADING PART [LOADING MOTOR]
2	BM-B371552	SC MOTOR SLIDE PART [SLIDE MOTOR]
3	BM-B372237	SC MOTOR SPINDLE PART [SPINDLE MOTOR]
4	*BO-368598	PICK UP KSS-150A
5	*BT-381519J	TRANS POW P2037(B,S) [B,S]
6	*BT-381518J	TRANS POW P2037(E,V) [E,V]
7	ED-344280	D SILICON H GMA-01-FY2 F05
8	ED-624903	D SILICON H 1S2473
9	ED-346619	D ZENER H HZ27 1
10	ED-346603	D ZENER H HZ6 A1
11	ED-302295	D ZENER H HZ7 C3
12	*EF-358974	FUSE BET T 250V 630MA [B]
13	*EF-601942	FUSE SEMKO T 250V 630MA [E,V,S]
14	*EI-378893J	IC AN79M05F
15	EI-377257	IC BA6218
16	EI-368608	IC CXA1081
17	EI-368609	IC CXA1082B
18	EI-368610	IC CXD1135Q
19	EI-382235J	IC CXP5058H-096Q
20	EI-357879	IC LA5512
21	EI-382251J	IC LC3517BS-15
22	EI-360039	IC TC74HC08P
23	*EI-377101	IC UPC7805HF
24	EI-381139J	OSC X'TAL HC-49/U 16934.400KHZ
25	EM-381523J	IND FL 6-BT-111GK
26	*EO-338409	COIL LF FKOB160MH02 250UH
27	ES-368603	SW LEAF MSW-1585 [OPEN/CLOSE SW]
28	*ES-371104	SW PUSH SDDLD1082A 01-1
29	ES-355842	SW SLIDE SSCTP1026A 1-01-02S [INNER SW]
30	ES-373381	SW TACT SKHHPP [PLAY/PAUSE]
31	ES-382463J	SW TACT SKHHQV [0]
32	ET-381683J	DETECTOR A1QH3021H0
33	ET-353899	TR 2SA1317 S,T,U
34	ET-366365	TR 2SB1185 E,F
35	ET-322598	TR 2SB632K E,F
36	*ET-318237	TR 2SB764 E,F
37	*ET-360067	TR 2SC3330 T,U F05
38	ET-366581	TR 2SD1762 E,F
39	ET-310148	TR 2SD612K E,F
40	ET-200986	TR 2SD863-V8 F
41	MB-368590J1	BELT LOADING
42	MZ-374138	CAM GEAR LOADING
43	MZ-368349	GEAR WORM WHEEL

2. MECHA BLOCK

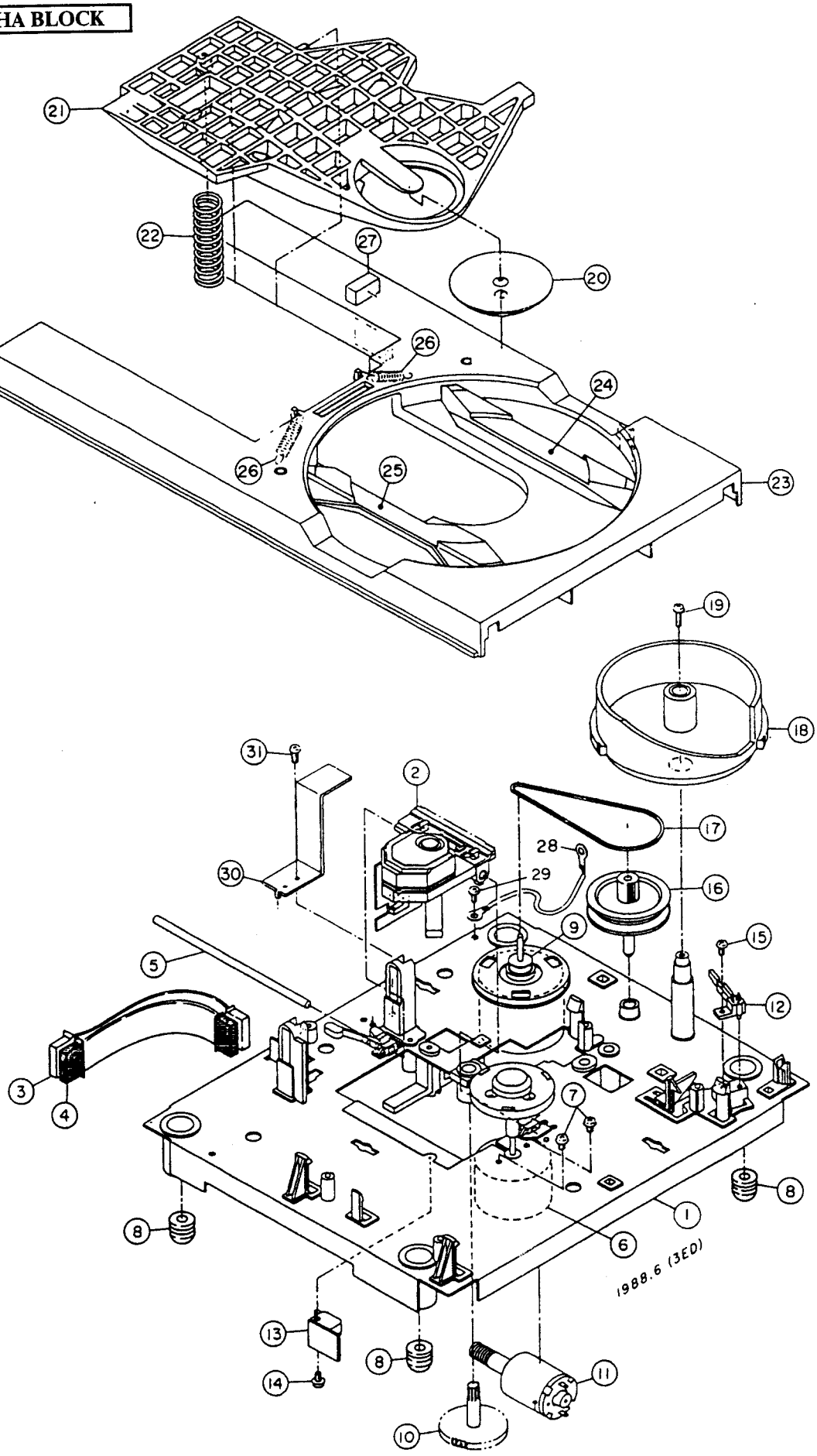
Ref. No.	Part No.	Description
1	MA-380689J	CHASSIS MECHA OUTSERT PART
2	*BO-368598	PICK UP KSS-150A
3	EW-368599	WIRE ASSY OT-M1 PU1 8P
4	EW-368600	WIRE ASSY OT-M1 PU2 8P
5	MS-368348	SHAFT
6	BM-B372237	SC MOTOR SPINDLE PART [SPINDLE MOTOR]
7	ZS-367463	PAN20X025STL CMT
8	MB-368350	CUSHION RUBBER
9	BM-B328441	SC MOTOR LOADING PART [LOADING MOTOR]
10	MZ-368349	GEAR WORM WHEEL
11	BM-B371552	SC MOTOR SLIDE PART [SLIDE MOTOR]
12	ES-368603	SW LEAF MSW-1585 [OPEN/CLOSE SW]
13	ES-355842	SW SLIDE SSCTP1026A 1-01-02S [INNER SW]
14	ZS-536488	BID20X08STL CMT
15	ZS-343082	PT BR26X08STL CMT
16	MR-374137J1	PULLEY GEAR
17	MB-368590J1	BELT LOADING
18	MZ-374138	CAM GEAR LOADING
19	ZS-365391	PT BR30X08STL CMT C080
20	MZ-368347	CLAMPER
21	SZ-374136J1	HOLDER CLAMPER
22	ZG-368591J1	SP PUSH CLAMP
23	SC-382692J2	DISK TRAY S PART
24	MZ-382686J1	HOLDER DISC S-(R)
25	MZ-382687J1	HOLDER DISC S-(L)
26	ZG-368592	SP PULL DISK HOLD
27	MB-377975	STOPPER RUBBER
28	ZW-562476	EL30BRS TIN 8L
29	ZS-343159	T2BR30X06STL NI3
30	MZ-378828J	ANGLE TRAY
31	ZS-432843	PAN26X04STL CMT
32	BB-P2036D060A	MECHA BLK CD-32 [INCL. 1 TO 31]

3. P.C BOARD BLOCK

Ref. No.	Part No.	Description
1A	BA-P2037D020E	PC(#) MAIN BLK DP-950 [E,B,S]
1B	BA-P2037A020F	PC(#) MAIN BLK CD-M959(V) [V]

PC (#) MAIN BLK CONSISTS OF FOLLOWING P.C BOARD.
* MAIN P.C BOARD
* GOVERNOR P.C BOARD

MECHA BLOCK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4. MAIN P.C BOARD

Ref. No.	Part No.	Description
C1	EC-315967	C EC V CUT AS1 332M 16.0DC
C2	EC-316187	C EC V CUT AS1 102M 16.0DC
D5	ED-346603	D ZENER H HZ6 A1
D6	ED-624903	D SILICON H 1S2473
D7	ED-344280	D SILICON H GMA-01-FY2 F05
D8	ED-624903	D SILICON H 1S2473
D9	ED-344280	D SILICON H GMA-01-FY2 F05
D10	ED-344280	D SILICON H GMA-01-FY2 F05
D11	ED-624903	D SILICON H 1S2473
D12	ED-344280	D SILICON H GMA-01-FY2 F05
D13	ED-344280	D SILICON H GMA-01-FY2 F05
IC1	EI-368608	IC CXA1081
IC2	EI-368609	IC CXA1082B
IC3	EI-382235J	IC CXP5058H-096Q
IC4	EI-368610	IC CXD1135Q
IC5	EI-382251J	IC LC3517BS-15
IC6	EI-360039	IC TC74HC08P
IC10	*EI-377101	IC UPC7805HF
IC11	*EI-378893J	IC AN79M05F
J12	EJ-381680J	PHONE J 3P HSJ0912-01-040 3.5 [SYNCRO REC]
L1	EO-351861	COIL FIX 1 LAL02 F05 100J
L2	EO-351861	COIL FIX 1 LAL02 F05 100J
L4	EO-345913	COIL FIX 1 LAL03KH 100K
L101	EO-351861	COIL FIX 1 LAL02 F05 100J
L103	EO-351861	COIL FIX 1 LAL02 F05 100J
L105	EO-351861	COIL FIX 1 LAL02 F05 100J
L106	EH-380185J	FILTER EMI ZBF503S-01
P1	EJ-374191	SOCKET OPTICAL T0TX172 [OPTICAL DIGITAL OUT]
TR7	*ET-360067	TR 2SC3330 T,U F05
TR8	ET-360067	TR 2SC3330 T,U F05
TR9	ET-353899	TR 2SA1317 S,T,U
TR10	ET-360067	TR 2SC3330 T,U F05
TR11	ET-200986	TR 2SD863-V8 F
TR12	ET-318237	TR 2SB764 E,F
TR13	ET-310148	TR 2SD612K E,F
TR14	ET-322598	TR 2SB632K E,F
TR15	ET-366581	TR 2SD1762 E,F
TR16	ET-322598	TR 2SB632K E,F
TR17	ET-366581	TR 2SD1762 E,F
TR18	ET-366365	TR 2SB1185 E,F
TR19	ET-360067	TR 2SC3330 T,U F05
TR20	ET-318237	TR 2SB764 E,F
TR21	ET-353899	TR 2SA1317 S,T,U
TR101	ET-360067	TR 2SC3330 T,U F05
TR102	ET-360067	TR 2SC3330 T,U F05
TR103	ET-360067	TR 2SC3330 T,U F05
VR1	EV-358829	R S-FIX H RH0615C 0.10W 223
VR2	EV-358829	R S-FIX H RH0615C 0.10W 223
VR3	EV-358829	R S-FIX H RH0615C 0.10W 223
VR4	EV-358829	R S-FIX H RH0615C 0.10W 223
VR5	EV-371279	R S-FIX H VM6CKPVB 0.30W 102
X1	EI-381139J	OSC X'TAL HC-49/U 16934.400KHZ

5. GOVERNOR P.C BOARD

Ref. No.	Part No.	Description
IC1	EI-357879	IC LA5512
IC2	EI-377257	IC BA6218

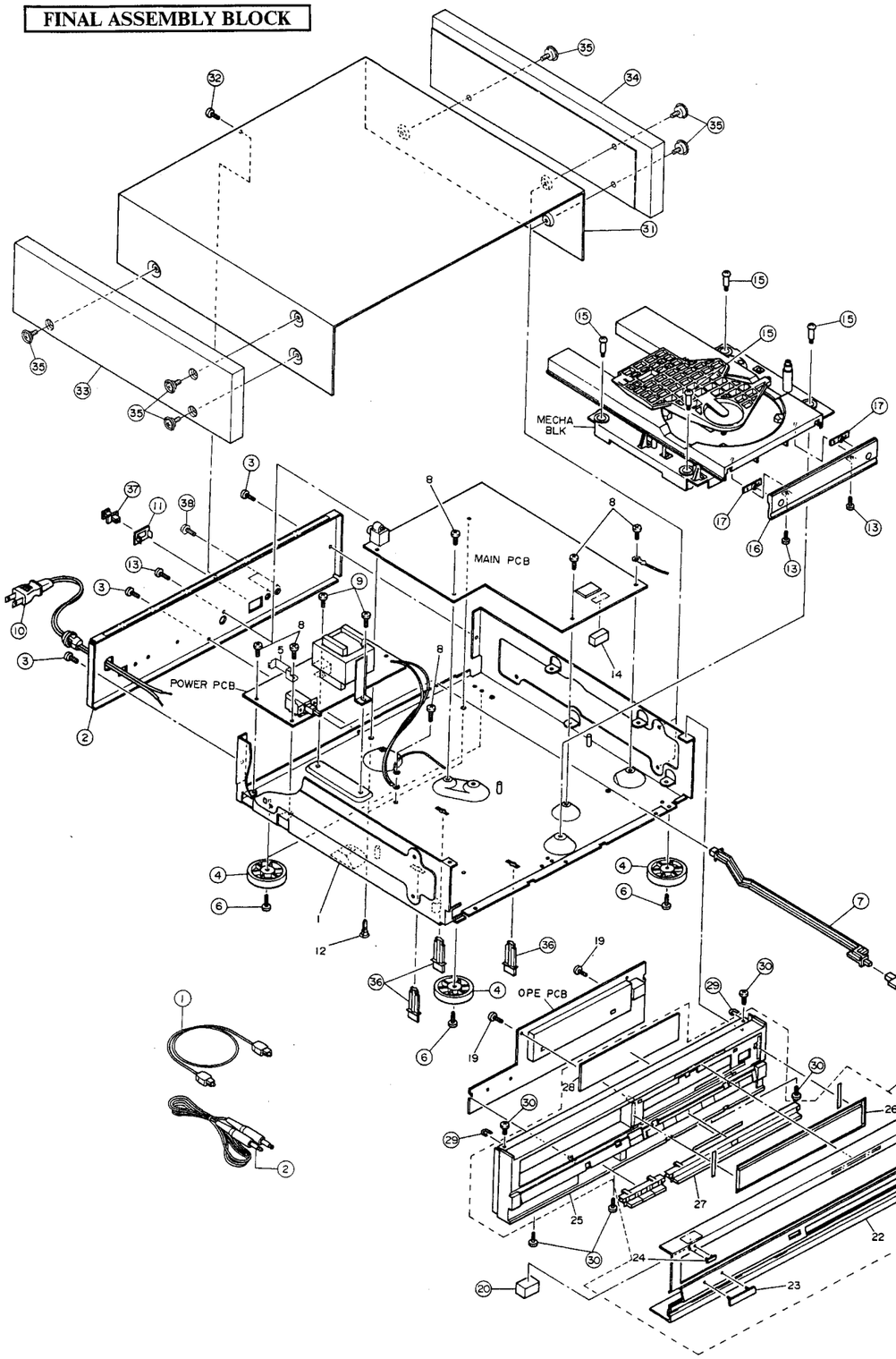
6. OPERATION P.C BOARD

Ref. No.	Part No.	Description
FL1	EM-381523J	IND FL 6-BT-111GK
RM1	ET-381683J	DETECTOR A1QH3021H0
TS1	ES-382463J	SW TACT SKHHQV [0]
TS2	ES-382463J	SW TACT SKHHQV [1]
TS3	ES-382463J	SW TACT SKHHQV [2]
TS4	ES-382463J	SW TACT SKHHQV [3]
TS5	ES-382463J	SW TACT SKHHQV [4]
TS6	ES-382463J	SW TACT SKHHQV [5]
TS7	ES-382463J	SW TACT SKHHQV [6]
TS8	ES-382463J	SW TACT SKHHQV [7]
TS9	ES-382463J	SW TACT SKHHQV [8]
TS10	ES-382463J	SW TACT SKHHQV [9]
TS11	ES-373381	SW TACT SKHHPP [PLAY/PAUSE]
TS12	ES-373381	SW TACT SKHHPP [STOP]
TS13	ES-373381	SW TACT SKHHPP [FS]
TS14	ES-373381	SW TACT SKHHPP [BS]
TS15	ES-373381	SW TACT SKHHPP [FF]
TS16	ES-373381	SW TACT SKHHPP [FR]
TS17	ES-373381	SW TACT SKHHPP [OPEN/CLOSE]
TS18	ES-382463J	SW TACT SKHHQV [REPEAT]
TS19	ES-382463J	SW TACT SKHHQV [PROGRAM]
TS20	ES-382463J	SW TACT SKHHQV [DISPLAY]
TS21	ES-382463J	SW TACT SKHHQV [10+]
TS22	ES-382463J	SW TACT SKHHQV [A-B]
TS23	ES-382463J	SW TACT SKHHQV [AUTO SPACE]
TS24	ES-373381	SW TACT SKHHPP [CLEAR]

7. POWER SUPPLY P.C BOARD

Ref. No.	Part No.	Description
C6	*EC-338496	C CE V FZ 472P 400AC
C7	*EC-338496	C CE V FZ 472P 400AC
D1	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D2	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D3	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D4	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D5	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D6	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D7	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D8	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D9	*ED-330622	D SILICON 1SR35A-100 100/1.0A
D10	ED-346619	D ZENER H HZ27 1
D11	ED-302295	D ZENER H HZ7 C3
D12	ED-330622	D SILICON 1SR35A-100 100/1.0A

FINAL ASSEMBLY BLOCK



Ref. No.	Part No.	Description
FL1	*EO-338409	COIL LF FKOB160MH02 250UH
SW1	*ES-371104	SW PUSH SDDLD1082A 01-1
TR1	*ET-318237	TR 2SB764 E,F
T1A	*BT-381518J	TRANS POW P2037(E,V) [E,V]
T1B	*BT-381519J	TRANS POW P2037(B,S) [B,S]
F1A	*EF-601942	FUSE SEMKO T 250V 630MA [E,V,S]
F2A	*EF-601942	FUSE SEMKO T 250V 630MA [E,V,S]
F1B	*EF-358974	FUSE BET T 250V 630MA [B]
F2B	*EF-358974	FUSE BET T 250V 630MA [B]

8. FINAL ASSEMBLY BLOCK

Ref. No.	Part No.	Description
2A	SP-383949J	PANEL REAR CD-M959(E) [E]
2B	SP-383950J	PANEL REAR CD-M959(V) [V]
2C	SP-383952J	PANEL REAR CD-M959(B,S) [B,S]
3	ZS-319460	T2BR30X06STL BZN PROJECTION
4	SA-376945J	FOOT(2) PART
6	ZS-351186	ST BR30X08STL CMT C080
7	MZ-383944J	JOINT POW
9	ZS-313796	ST BID40X06STL CMT
10A	*EW-363671	AC CORD 200 0364 LCFL B100 A E [E,V]
10B	*EW-363683	AC CORD 200 LCFL B100 A B [B]
10C	*EW-363697	AC CORD 200 0436 LCFL B100 A S [S]
11	SE-375348	ESCUTCHEON
13	ZS-350934	PT BR30X08STL BNI
15	ZS-378163	SCREW GRADUATED
16-B	SP-383960J	PANEL TRAY B
16-G	SP-383961J	PANEL TRAY G
17-B	ZS-383974J	SCREW DECORATION B
17-G	ZS-383975J	SCREW DECORATION G
18-B	SK-383976J	KNOB POW B
18-G	SK-383977J	KNOB POW G
20	SZ-386890J	CUSHION PANEL
21-B	BD-P2042E040C	PANEL FRONT BLK CD-M959-B
21-G	BD-P2042E040D	PANEL FRONT BLK CD-M959-G
24-B	SM-370750C	NAME PLATE AKAI B2
24-G	SM-370750B-A	NAME PLATE AKAI G
26	SE-383963J	WINDOW FILTER
28	SE-383964J	FILTER FLD
29	ZW-330423	UW40X130X025SUP CMT
30	ZS-376523	ST BID30X06STL BNI EARTH LOCK
31-B	SP-383965J1	COVER UPPER B
31-G	SP-383966J1	COVER UPPER G
32	ZS-308846	T2BR30X08STL BZN PROJECTION
33	SP-383967J	SIDE BOARD(L)
34	SP-383968J	SIDE BOARD(R)
35	ZS-365678	SCREW SLIDE TYPE W/WASHER(J)
36	SZ-383945J	CLAMPER CHASSIS
37	SZ-725384J	CAP OPTICAL PROTECTER
38	ZS-354771	T2BR30X08STL NI3 PROJECTION [V]

9. ACCESSARY

Ref. No.	Part No.	Description
1	ZZ-374173	CORD TOCP172-150CB
2	AX-382472J	CORD EC-236V M-M

INDEX

Part No.	Ref. No.
AX-382472J	9-2
BA-P2037A020F	3-1B
BA-P2037D020E	3-1A
BB-P2036D060A	2-32
BD-P2042E040C	8-21-B
BD-P2042E040D	8-21-G
BM-B328441	1-1
BM-B328441	2-9
BM-B371552	1-2
BM-B371552	2-11
BM-B372237	1-3
BM-B372237	2-6
BO-368598	1-4
BO-368598	2-2
BT-381518J	1-6
BT-381518J	7-T1A
BT-381519J	1-5
BT-381519J	7-T1B
EC-315967	4-C1
EC-316187	4-C2
EC-338496	7-C6
EC-338496	7-C7
ED-302295	1-11
ED-302295	7-D11
ED-330622	7-D1
ED-330622	7-D2
ED-330622	7-D3
ED-330622	7-D4
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EI-381139J	4-X1
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EI-382235J	4-IC3
EI-382251J	1-21
EI-382251J	4-IC5
EJ-374191	4-P1
EJ-381680J	4-J12
EM-381523J	1-25
EM-381523J	6-FL1
EO-338409	1-26
EO-338409	7-FL1
EO-345913	4-L4
EO-351861	4-L1
EO-351861	4-L2
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EO-351861	4-L103
EO-351861	4-L105
ES-355842	1-29
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ES-368603	1-27
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ES-371104	1-28
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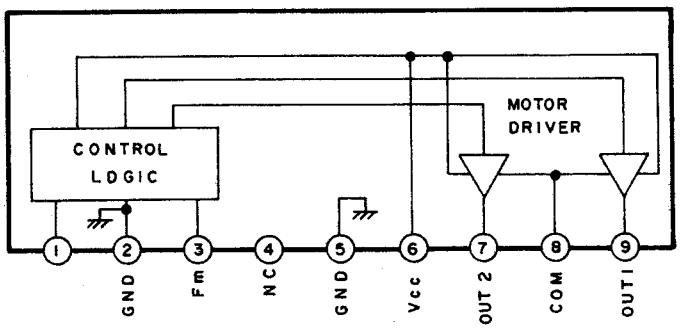
ES-382463J	6-TS19
ES-382463J	6-TS20
ES-382463J	6-TS21
ES-382463J	6-TS22
ES-382463J	6-TS23
ET-200986	1-40
ET-200986	4-TR11
ET-310148	1-39
ET-310148	4-TR13
ET-318237	1-36
ET-318237	4-TR12
ET-318237	4-TR20
ET-318237	7-TR1
ET-322598	1-35
ET-322598	4-TR14
ET-322598	4-TR16
ET-353899	1-33
ET-353899	4-TR9
ET-353899	4-TR21
ET-360067	1-37
ET-360067	4-TR7
ET-360067	4-TR8
ET-360067	4-TR10
ET-360067	4-TR19
ET-360067	4-TR101
ET-360067	4-TR102
ET-360067	4-TR103
ET-366365	1-34
ET-366365	4-TR18
ET-366581	1-38
ET-366581	4-TR15
ET-366581	4-TR17
ET-381683J	1-32
ET-381683J	6-RM1
EV-358829	4-VR1
EV-358829	4-VR2
EV-358829	4-VR3
EV-358829	4-VR4
EV-371279	4-VR5
EW-363671	8-10A
EW-363683	8-10B
EW-363697	8-10C
EW-368599	2-3
EW-368600	2-4
MA-380689J	2-1
MB-368350	2-8
MB-368590J1	1-41
MB-368590J1	2-17
MB-377975	2-27
MR-374137J1	2-16
MS-368348	2-5
MZ-368347	2-20
MZ-368349	1-43
MZ-368349	2-10
MZ-374138	1-42
MZ-374138	2-18
MZ-378828J	2-30
MZ-382686J1	2-24
MZ-382687J1	2-25
MZ-383944J	8-7
SA-376945J	8-4
SC-382692J2	2-23
SE-375348	8-11
SE-383963J	8-26
SE-383964J	8-28
SK-383976J	8-18-B
SK-383977J	8-18-G
SM-370750B-A	8-24-G
SM-370750C	8-24-B
SP-383949J	8-2A
SP-383950J	8-2B
SP-383952J	8-2C
SP-383960J	8-16-B
SP-383961J	8-16-G
SP-383965J1	8-31-B
SP-383966J1	8-31-G
SP-383967J	8-33
SP-383968J	8-34
SZ-374136J1	2-21
SZ-383945J	8-36
SZ-386890J	8-20
SZ-725384J	8-37
ZG-368591J1	2-22
ZG-368592	2-26
ZS-308846	8-32
ZS-313796	8-9
ZS-319460	8-3
ZS-343082	2-15
ZS-343159	2-29
ZS-350934	8-13
ZS-351186	8-6
ZS-354771	8-38
ZS-365391	2-19
ZS-365678	8-35
ZS-367463	2-7
ZS-376523	8-30
ZS-378163	8-15
ZS-383974J	8-17-B
ZS-383975J	8-17-G
ZS-432843	2-31
ZS-536488	2-14
ZW-330423	8-29
ZW-562476	2-28
ZZ-374173	9-1

AKAI

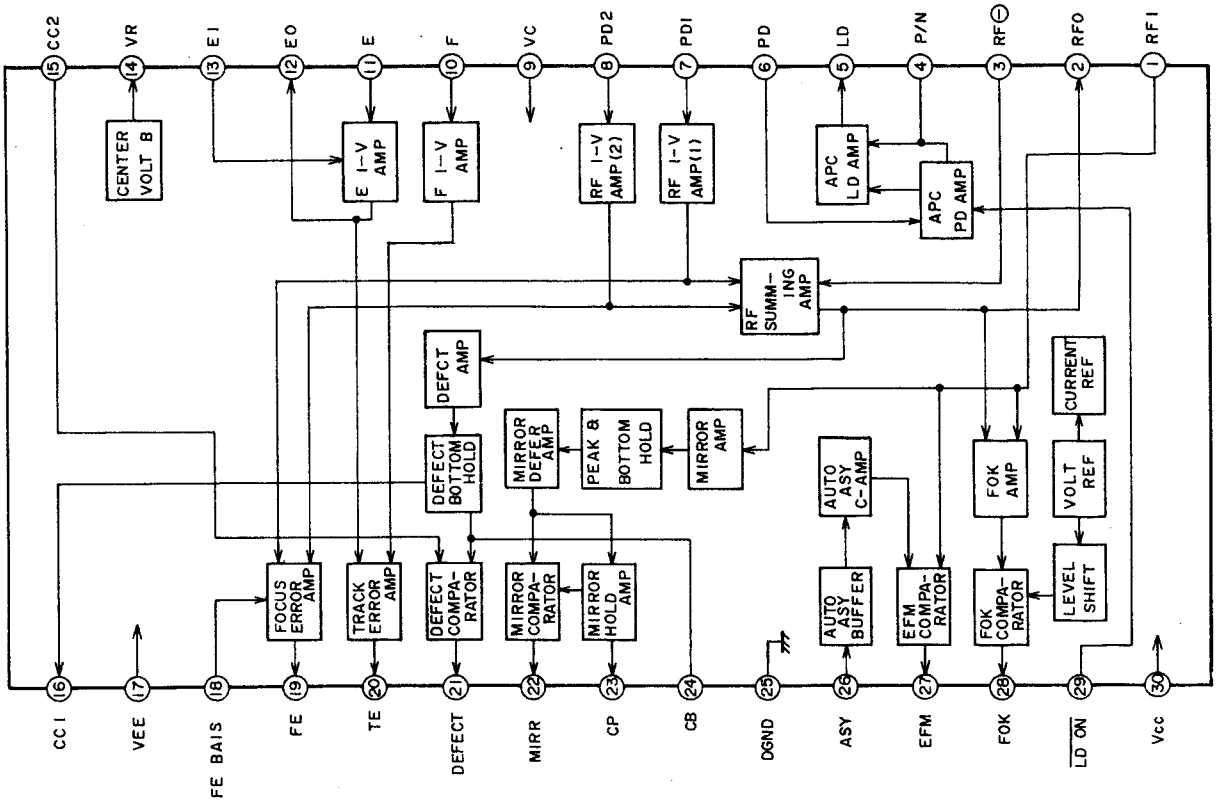
MODEL CD-M959

SCHEMATIC DIAGRAM
AND PC BOARDS

BA6218 REVERSIBLE MOTOR DRIVER



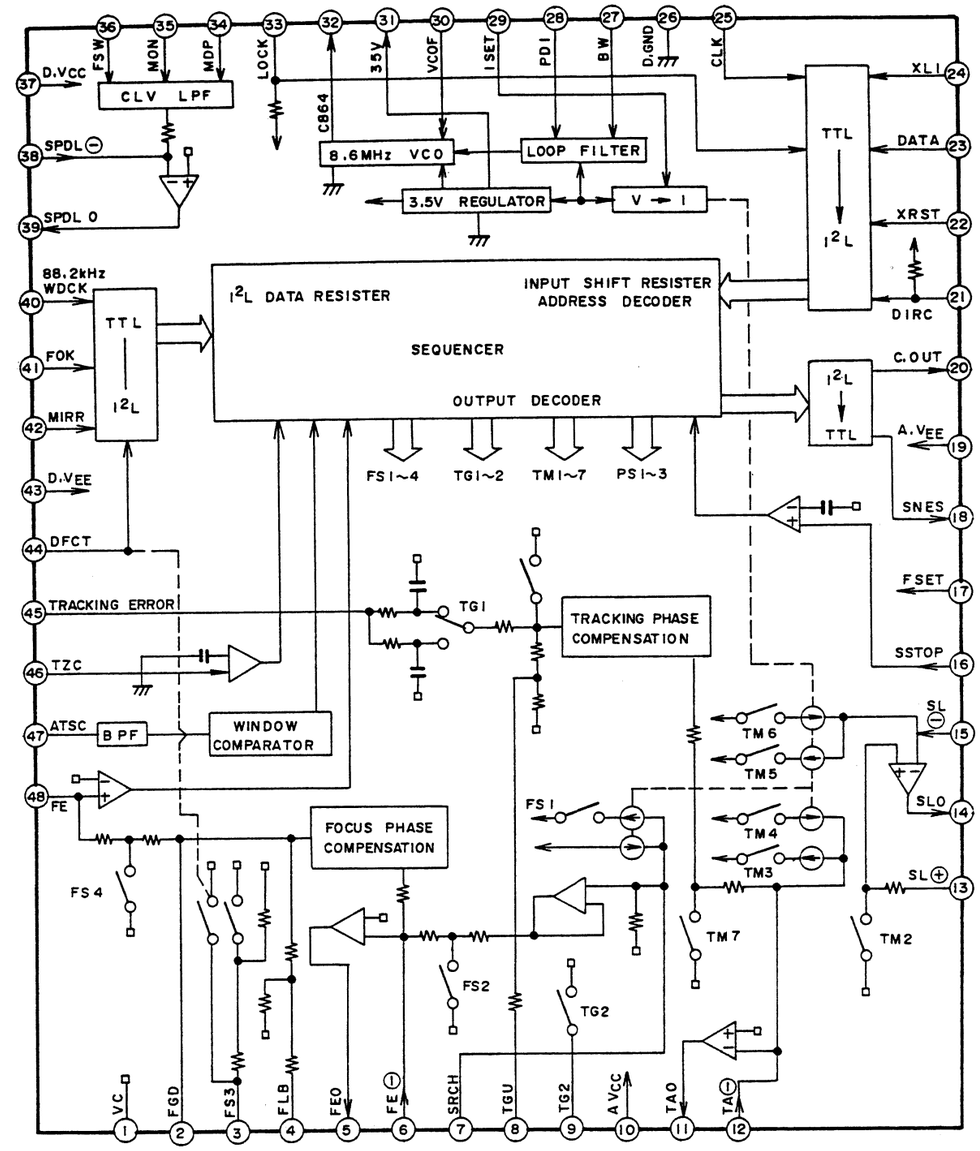
CXA1081 RF AMPLIFIER



CXA1081 RF AMPLIFIER

PIN NO.	SYMBOL	I/O	FUNCTION
1	RF1	I	RF SIGNAL FROM SUMMING AMP
2	RF0	O	RF SIGNAL OUT (EYE PATTERN CHECK POINT)
3	RF⊖	I	FEED BACK TO SUMMING AMP
4	P/N	—	NC
5	LD	O	AUTO POWER CONTROL OUT (TO LASER DIODE)
6	PD	I	AUTO POWER CONTROL IN (FROM PILOT DIODE)
7	PD1	I	A+C SIGNAL RF I-V AMP IN
8	PD2	I	B+D SIGNAL RF I-V AMP IN
9	VC	—	GND
10	F	I	TRACKING DIODE SIGNAL RF I-V AMP IN (F)
11	E	I	TRACKING DIODE SIGNAL RF I-V AMP IN (E)
12	E0	O	RF I-V AMP (E) OUT
13	E1	I	FEED BACK TO RF I-V AMP (E)
14	VR	—	NC
15	CC2	I	DEFECT BOTTOM HOLD IN
16	CC1	O	DEFECT BOTTOM HOLD OUT
17	VEE	—	−B
18	F · EBIAS	I	FOCUS OFF-SET VOLTAGE IN
19	FE	O	FOCUS ERROR OUT
20	TE	O	TRACKING ERROR OUT
21	DEFECT	O	DEFECT COMPALATOR OUT
22	MIRR	O	MIRROR COMPALATOR OUT
23	CP	I	CONNECT MIRROR HOLD CONDENSER
24	CB	I	CONNECT BOTTOM HOLD CONDENSER
25	DGND	—	GND
26	ASY	I	AUTO ASYMMETRY SIGNAL IN
27	EFM	O	EFM COMPALATOR OUT
28	FOK	O	FOCUS OK COMPALATOR OUT
29	LDON	I	LASER DIODE ON/OFF CONTROL IN
30	VCC	—	+B

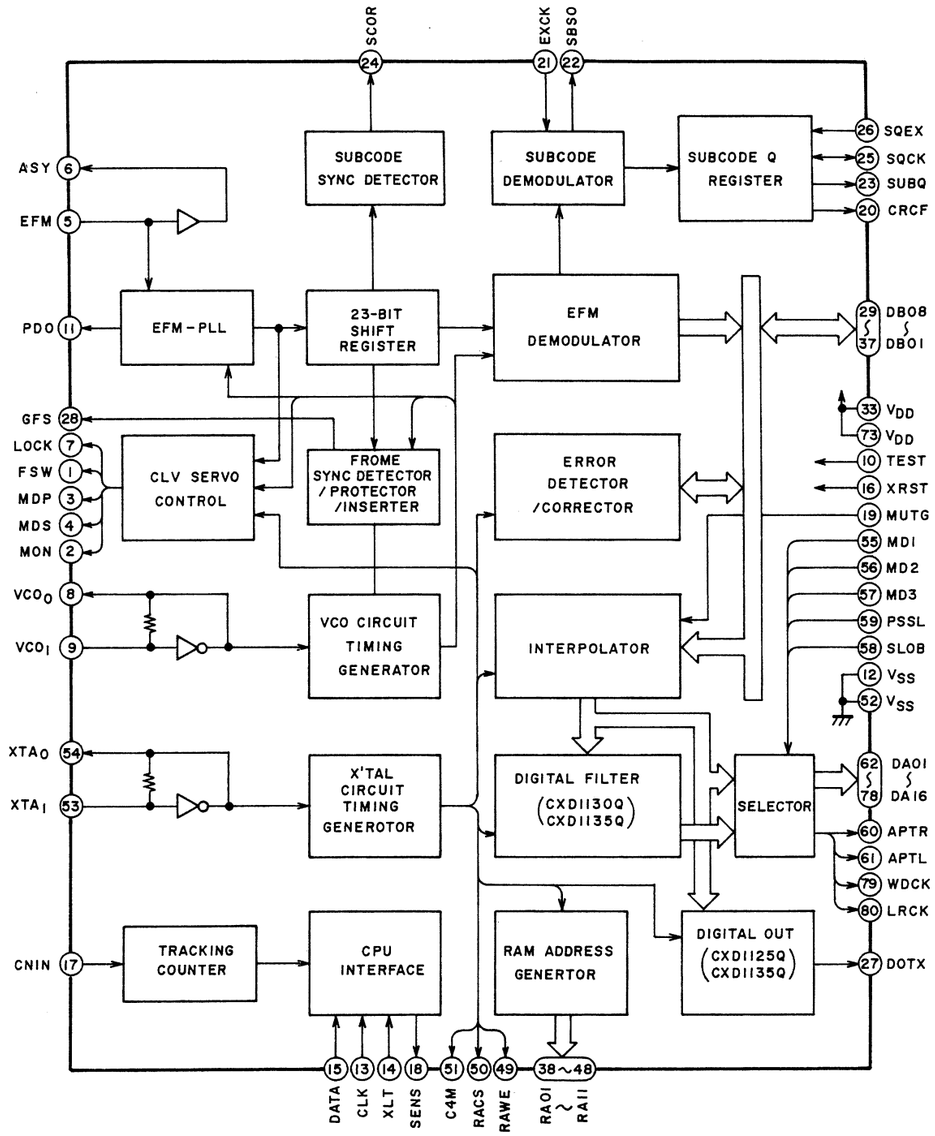
CXA1082A SERVO SIGNAL PROCCESOR



CXA1082A SERVO SIGNAL PROCCESOR

PIN NO.	SYMBOL	I/O	DESCRIPTION
1	VC	——	GND (0V)
2	FGD	——	Connect condenser for Focus servo gain control.
3	FS3	——	Focus servo gain select.
4	FLB	——	Connect condenser for Focus servo correction.
5	FE0	O	Focus drive output.
6	FE ⊖	I	FOCUS AMP. Inverting input.
7	SRCH	——	Connect condenser for Focus search wave.
8	TGU	——	Connect condenser for Tracking gain select.
9	TG2	——	Connect condenser for Tracking gain select.
10	A.VCC	——	+5V
11	TA0	O	Tracking drive output.
12	TA ⊖	I	Tracking AMP. Inverting input.
13	SL ⊕	I	Slide motor non-inverting input
14	SLO	O	Slide motor drive output.
15	SL ⊖	I	Slide AMP. inverting input.
16	SSTOP	I	Not use (Holded "H" level).
17	FSET	I	Focus, Tracking compensation and CLV. LPF set up.
18	SENS	O	FZC. AS. TZC. SSTOP and $\overline{\text{BUSY}}$ output.
19	A. VEE	——	−5V.
20	C.OUT	O	Track count signal output.
21	DIRC	——	Not used
22	$\overline{\text{RST}}$	I	$\overline{\text{RESET}}$ Input.
23	DATA	I	Data signal input from CPU.
24	$\overline{\text{LT}}$	I	Lutch signal input from CPU.
25	CLK	I	Clock signal input from CPU.
26	D.GND	——	GND (0V).
27	BW	I	Connect condenser for Loop filter.
28	PDI	I	PDO signal from IC3 CXD1135Q (Pin 11).
29	ISET	I	Focus search, Track jump and slide kick current input.
30	VCOF	I	Connect register for VCO frequency.
31	3.5V	O	+3.5V REG. output.
32	C864	O	8.64 MHz VCO output.
33	LOCK	I	LOCK signal from IC3 CXD1135Q (Pin 7)
34	MDP	I	MDP signal from IC3 CXD1135Q (Pin 3)
35	MON	I	MON signal from IC3 CXD1135Q (Pin 2)
36	FSW	I	Connect condenser for CLV servo error signal LPF.
37	DVCC	——	+5V
38	SPDL ⊖	I	Spindle drive AMP. inverting input.
39	SPDLO	I	Spindle drive output.
40	WDCK	I	Auto sequence clock signal input (88.2 kHz)
41	FOK	I	Focus OK signal input.
42	MIRR	I	MIRR signal input.
43	DVEE	——	−5V
44	DFCT	I	Defect signal input "H" active.
45	TE	I	Tracking error signal input.
46	TZC	I	Tracking zero cross comparator input.
47	ATSC	I	ATSC detect window comparator input.
48	FE	I	Focus error signal input.

CXD1135Q DIGITAL SIGNAL PROCCESOR



No.	Symbol	I/O	Description
1	FSW	O	Spindle motor filter switching control
2	MON	O	Spindle motor ON/OFF control
3	MPD	O	Spindle motor speed and phase control
4	MDS	O	Spindle motor speed control
5	EFM	I	EFM signal input
6	ASY	O	EFM signal slice level control
7	LOCK	O	Slide motor over reach guard signal output
8	VCOO	O	VCO output f=8.6436 MHz
9	VCOI	I	VCO input
10	TEST	I	OV (GND)
11	PDO	O	Phase comp.output
12	VSS	—	GND (OV)
13	CLK	I	Clock signal from CPU
14	$\overline{LT}$	I	Lutch signal from CPU
15	DATA	I	Serial data from CPU
16	$\overline{RST}$	I	RESET input "L" reset
17	CNIN	I	Tracking pulse input (5V)
18	SENS	O	Output of CPU interface
19	MUTG	I	Mute control signal input
20	CRCF	O	CRC check output of the subcode Q "L" detect error
21	EXCK	I	NOT USE
22	SBSO	O	NOT USE
23	SUBQ	O	Subcode Q output
24	SCOR	O	Subcode sync detection output
25	SQCK	I/O	Clock signal for subcode Q
26	SQEX	I	Select input of CQCK (+5V)
27	DOTX	O	Digital output
28	GFS	O	"H" frame sync lock "L" frame sync unlock
29	DB08	I/O	Data 8 (MSB) Data Bus line for the EXT.RAM (LC3517AS-15)
30	DB07	I/O	Data 7 Data bus line for the EXT.RAM (LC3517AS-15)
31	DB06	I/O	Data 6 Data Bus line for the EXT.RAM (LC3517AS-15)
32	DB05	I/O	Data 5 Data Bus line for the EXT.RAM (LC3517AS-15)
33	VDD	—	+5V
34	DB04	I/O	Data 4 Data Bus line for the EXT.RAM (LC3517AS-15)
35	DB03	I/O	Data 3 Data Bus line for the EXT.RAM (LC3517AS-15)
36	DB02	I/O	Data 2 Data Bus line for the EXT.RAM (LC3517AS-15)
37	DB01	I/O	Data 1 (LSB) Data Bus line for the EXT.RAM (LC3517AS-15)
38	RA01	O	ADDR01 (LSB) Address signal output for the EXT. RAM (LC3517AS-15)
39	RA02	O	ADDR02 Address signal output for the EXT. RAM (LC3517AS-15)
40	RA03	O	ADDR03 Address signal output for the EXT. RAM (LC3517AS-15)

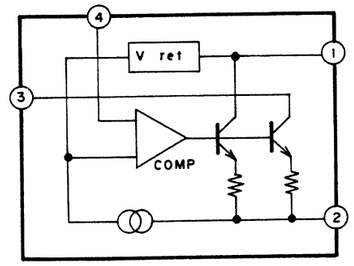
No.	Symbol	I/O	Description
41	RA04	O	ADDR04 Address signal output for the EXT. RAM (LC3517AS-15)
42	RA05	O	ADDR05 Address signal output for the EXT. RAM (LC3517AS-15)
43	RA06	O	ADDR06 Address signal output for the EXT. RAM (LC3517AS-15)
44	RA07	O	ADDR07 Address signal output for the EXT. RAM (LC3517AS-15)
45	RA08	O	ADDR08 Address signal output for the EXT. RAM (LC3517AS-15)
46	RA09	O	ADDR09 Address signal output for the EXT. RAM (LC3517AS-15)
47	RA10	O	ADDR10 Address signal output for the EXT. RAM (LC3517AS-15)
48	RA11	O	ADDR11 (MSB) Address signal output for the EXT. RAM (LC3517AS-15)
49	RAWE	O	Write enable signal output "L" active
50	RACS	O	Chip select signal output "L" active
51	C4M	O	1/4X'tal OSC.output (f=4.2336MHz)
52	Vss	—	GND(0V)
53	XTAI	I	X'tal OSC. input (f=16.9344MHz)
54	XTAO	O	X'tal OSC.output (f=16.9344MHz)
55	MD1	I	Mode select input 1 0V (GND)
56	MD2	I	Mode select input 2 0V (GND)
57	MD3	I	Mode select input 3 0V (GND)
58	SLOB	I	0V (GND)
59	PSSL	I	0V (GND)
60	APTR	O	Aperture correction signal output "H" R-channel
61	APTL	O	Aperture correction signal output "H" L-channel
62	C1F1	O	NOT USE
63	C1F2	O	TP-C1F2
64	C2F1	O	NOT USE
65	C2F2	O	NOT USE
66	C2FL	O	TP-CSFL
67	C2P0	O	NOT USE
68	RFCK	O	NOT USE
69	WFCK	O	TP-WFCK
70	$\overline{\text{PLCK}}$	O	NOT USE
71	UGFS	O	NOT USE
72	GTOP	O	NOT USE
73	VDD	—	+5V
74	RA0V	O	NOT USE
75	4CLR	O	NOT USE
76	$\overline{\text{C210}}$	O	$\overline{\text{C210}}$ INV.C210 (Pin 77) f=2.1168MHz
77	C210	O	NOT USE
78	DATA	O	Data output
79	WDCK	O	Worde clock output 88.2kHz strobe
80	LRCK	O	NOT USE (L-ch, R-ch clock output)

CXP5058H-069Q SYSTEM MI-COM

Pin. No.	Symbol	I/O	Active	Description
77 to 12	S0 to S15	O		Display (Segment) data output
23 to 28	T5 to T0	O		Timming (Digit) data output
29	INT (SCOR)	I	L	S
31	Ex'tal			
32	RST	I	L	Reset pulse Input
37	$\overline{\text{RST}}$	O	L	System Reset output
38	LASER	O	L	Laser diode ON/OFF control
40	GFS	I	H	Input for
41	MUTE	O	L	Mute ON/OFF control output
42	FOK	I	H	Input for Focus Surveillance
44	SQCK	O		Sub Code Read clock output
46	SUBQ			Sub code Read Port
48 49 50	DATA LT CLK	O O O		Peripheral LSI command output
51	SENS	I	L	Surveillance port for Peripheral LSI status.
52	OPENSW	I	L	Detection input of tray open
53	CISSW	I	L	Detection input of tray close
54	PIC SW	I	L	Detection input of pickup is inside track.
55 56	OPNMT CLS MT	O O	H H	Loading motor control output of tray open Loading motor control output to tray close
57 58	SCN4 SCN5	O	L	Key scan pulse output
62	RMC	I	—	Remote control data input
63 to 66	SCN0 to SCN3	O	L	Key Scan pulse output.
67 to 70	SENS0 to SENS3	I	L	Key input data Read

LA5512

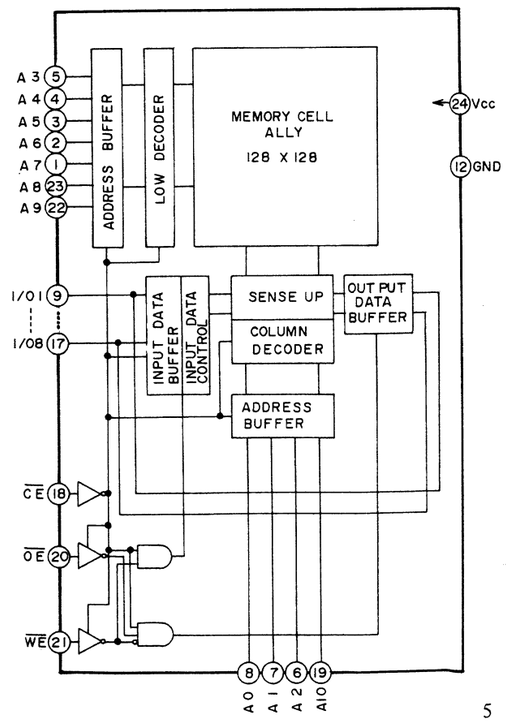
DC MOTOR CONTROLLER

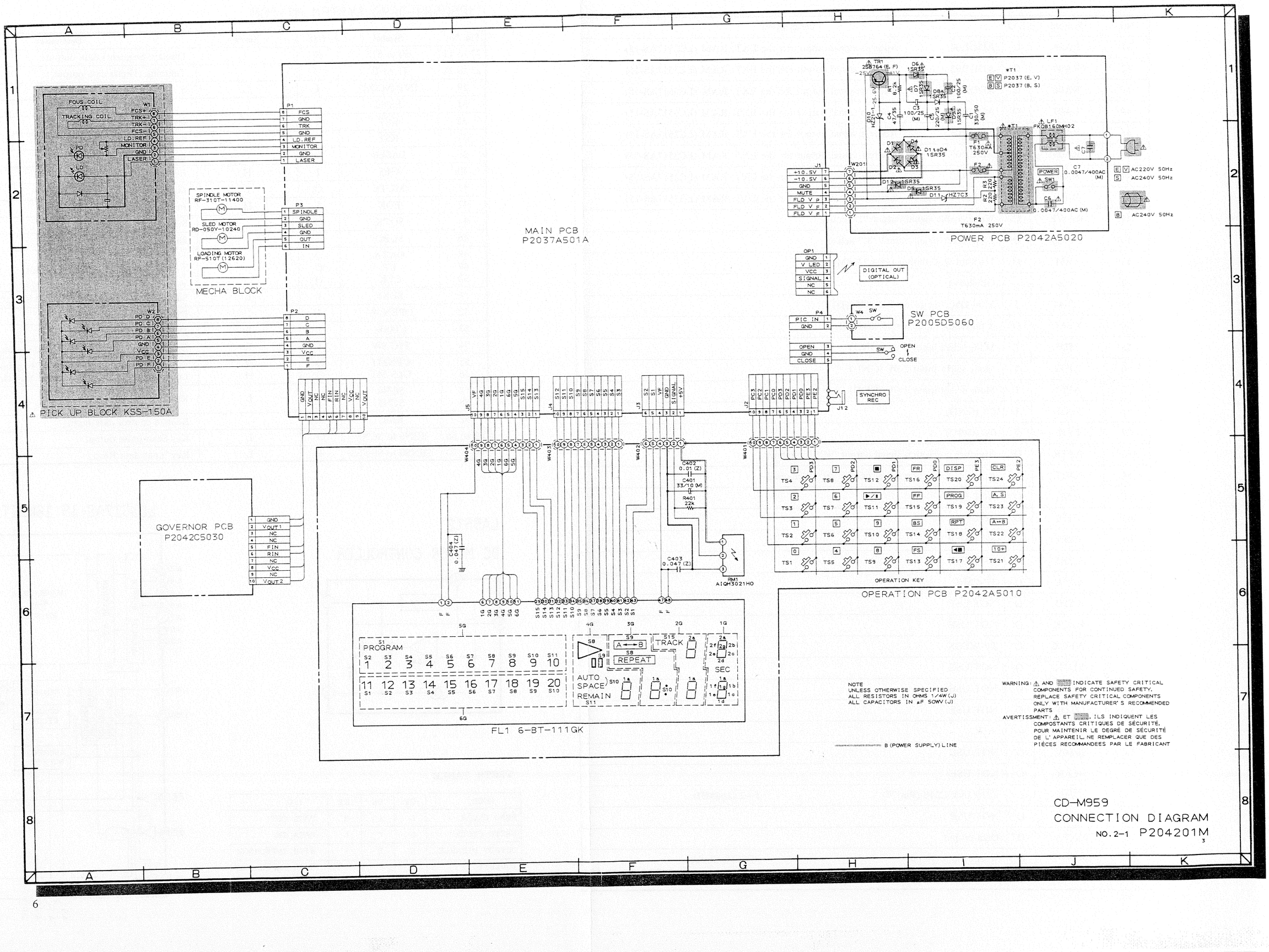


TRUTH TABLE

MODE	CE	OE	WE	I/O
READ CYCLE	L	L	H	DATA OUT
WRITE CYCLE	L	*	L	DATA IN
OUTPUT DISABLE	L	H	*	HIGH IMPEDANCE
INHIBIT	H	*	*	HIGH IMPEDANCE

LC3517AS-15 16KBIT RAM





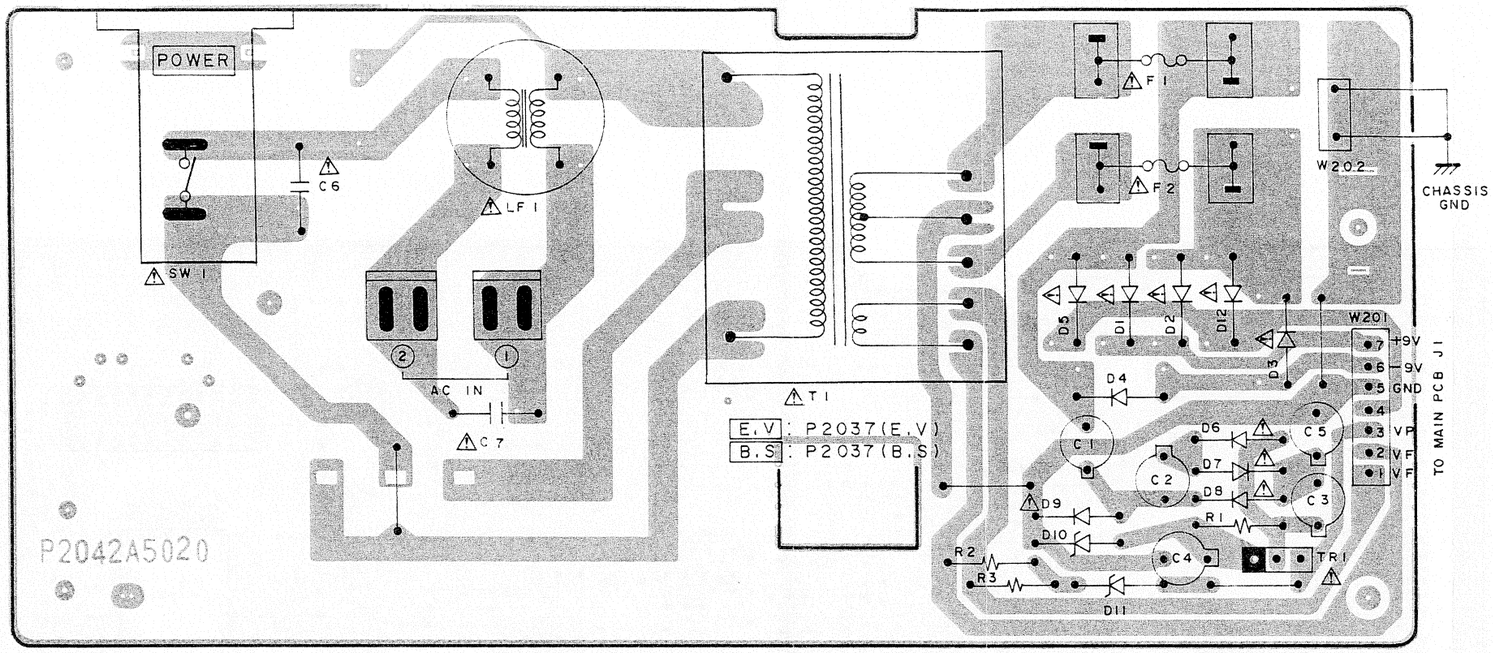
NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/4W (J)
ALL CAPACITORS IN μF 50WV (J)

B (POWER SUPPLY) LINE

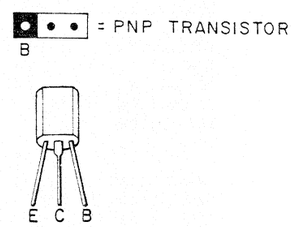
WARNING: ⚠ AND ▨ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

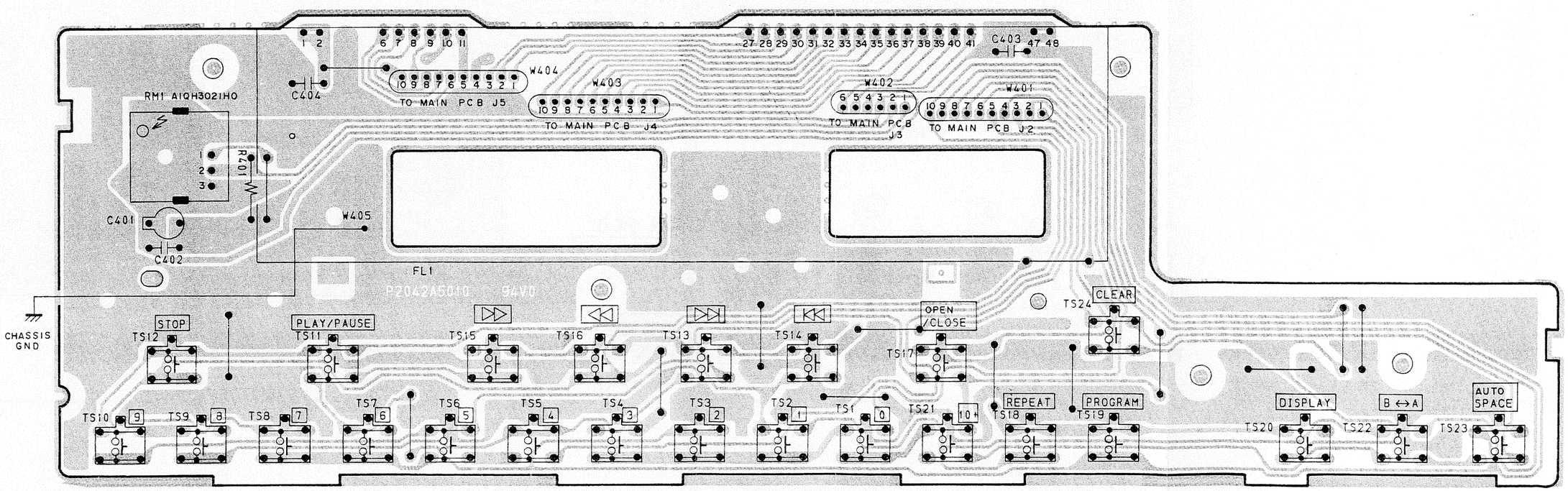
AVERTISSMENT: ⚠ ET ▨, ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ, POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LE FABRICANT

CD-M959
CONNECTION DIAGRAM
NO. 2-1 P204201M
3



POWER PCB P2042A5020





OPERATION PCB P2042A5010

WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

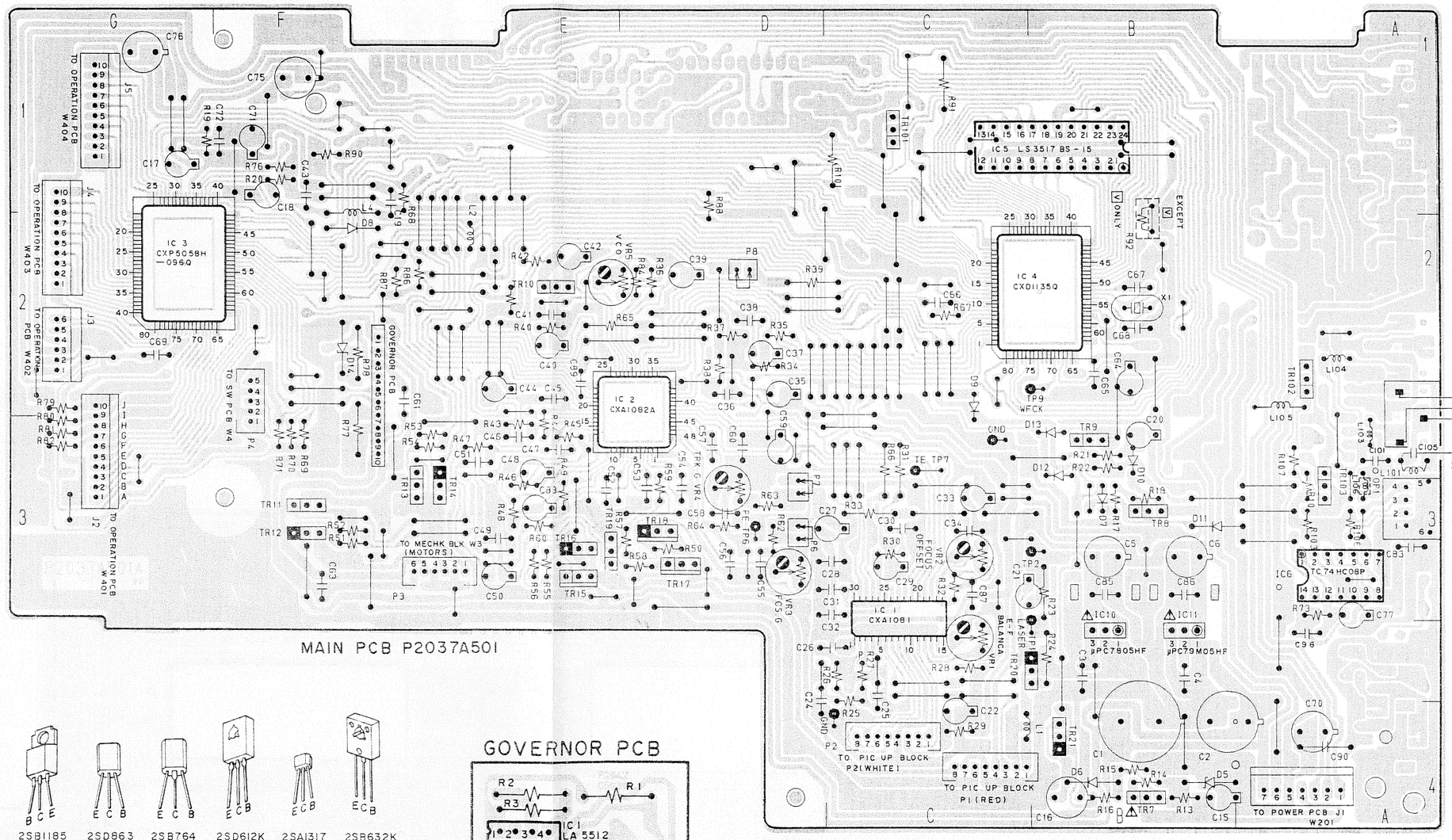
AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

LOCATION OF COMPONENTS

ICS
IC1.....C3
IC2.....D2
IC3.....G2
IC4.....B2
IC5.....B1
IC6.....A3
IC9.....F2
IC10....B4
IC11....B4
IC101...A3

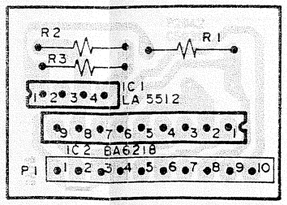
TRANSISTORS
TR7.....B4
TR8.....B3
TR9.....B3
TR10....E1
TR11....F3
TR12....F3
TR13....F3
TR14....E3
TR15....E3
TR16....E3
TR17....D3
TR18....D3
TR19....E3
TR20....C4
TR21....B4
TR101...C1
TR102...A2
TR103...A3

CONNECTORS
J1......A3
J2......G3
J3......G2
J4......G2
J5......G1
J10.....A32
J11.....A2
J12.....A2
P1......C4
P2......C4
P3......E3
P4......F2
P6......D3
P7......D3
P8......D2



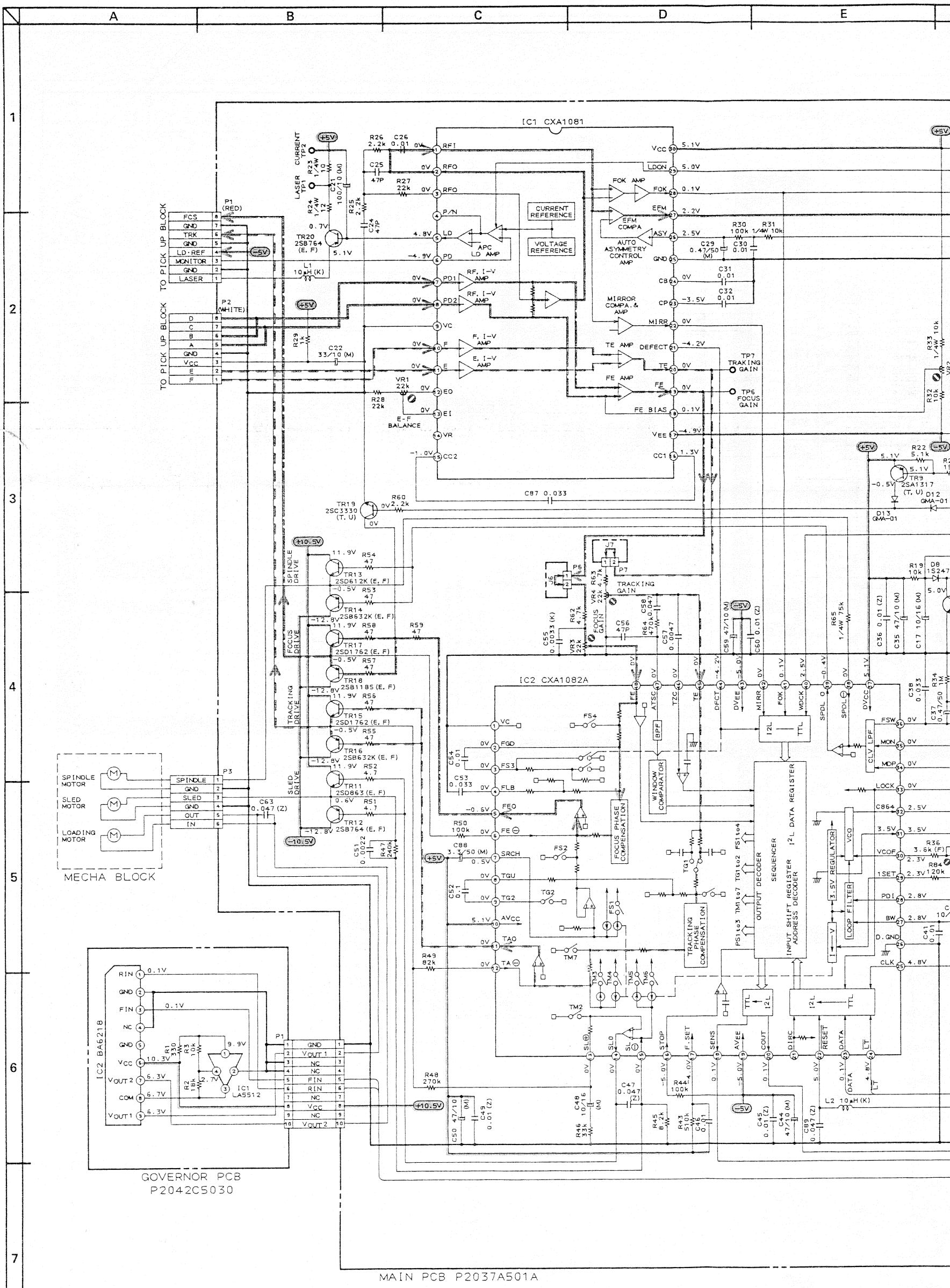
= PNP TRANSISTOR

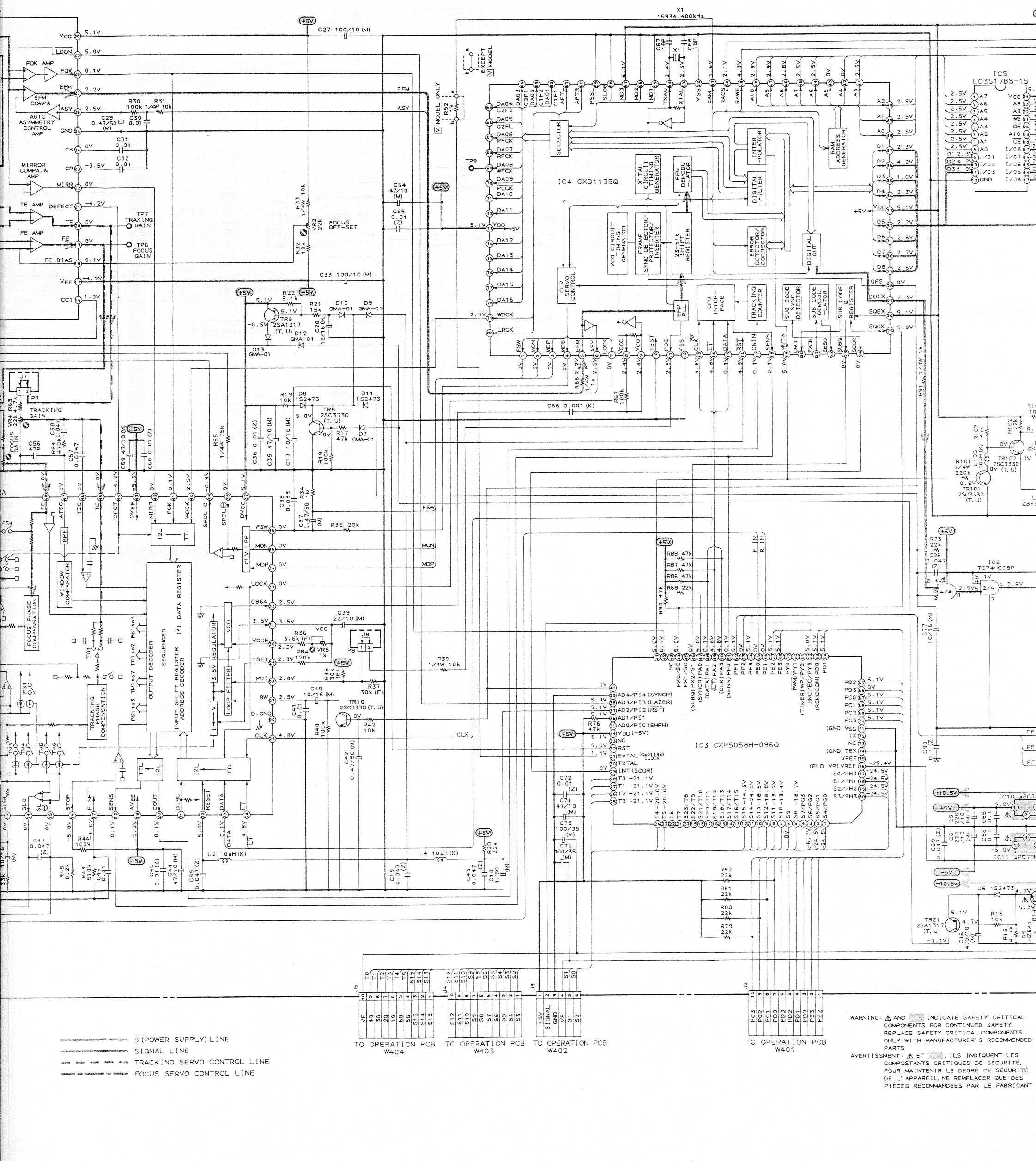
= NPN TRANSISTOR

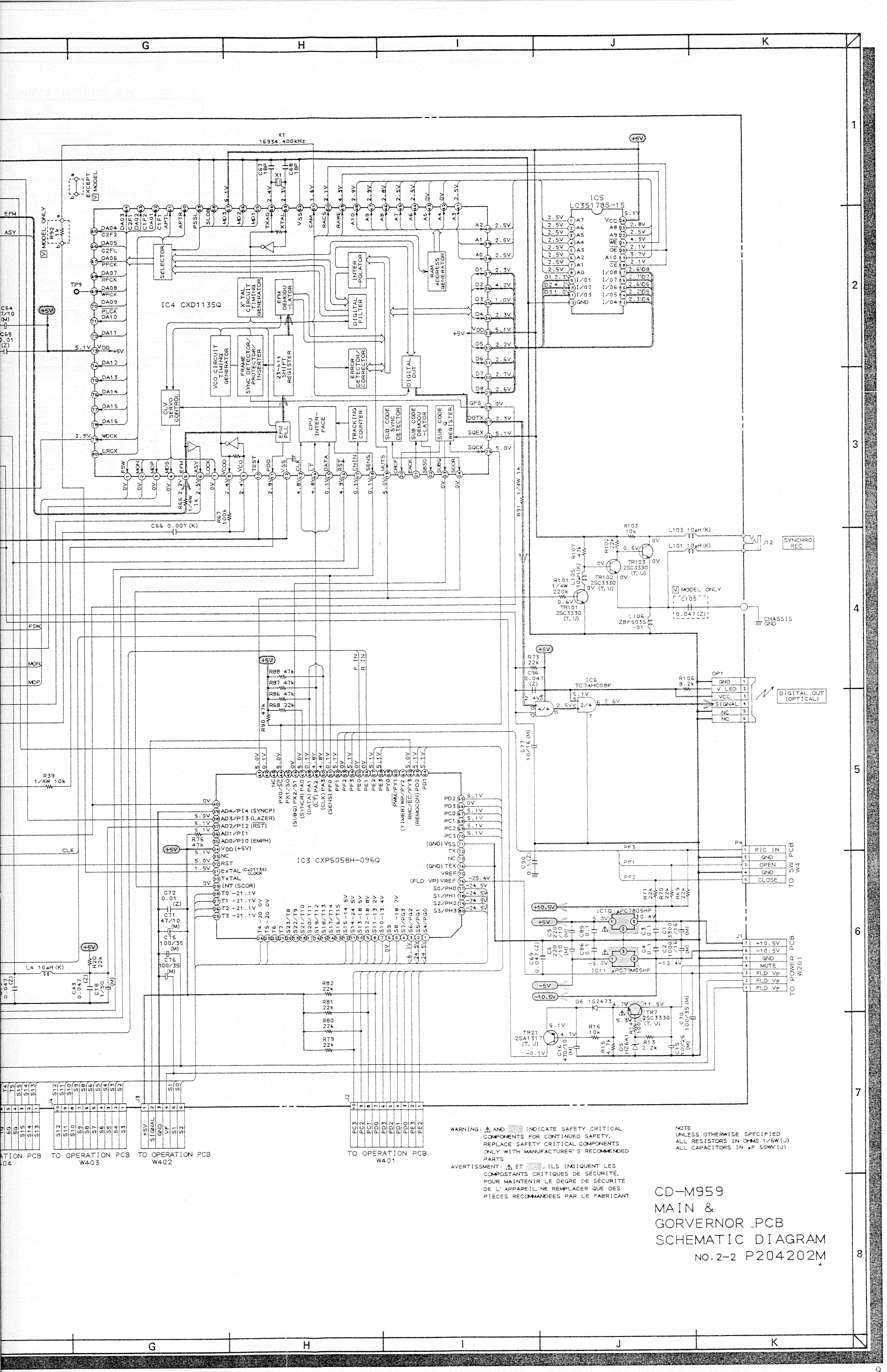


WARNING: ⚠INDICATES SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSEMENT: ⚠IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDÉES PAR LE FABRICANT


IC1 CXA1081
IC2 CXA1082A
IC2 BA6218
IC1 LA5512
TR20 2SB764 (E, F)
TR19 2SC3330 (T, U)
TR13 2SD612K (E, F)
TR14 2SB632K (E, F)
TR17 2SD1762 (E, F)
TR18 2SB1185 (E, F)
TR15 2SD1762 (E, F)
TR16 2SB632K (E, F)
TR11 2SD863 (E, F)
TR12 2SB764 (E, F)
TR9 2SA1317 (T, U)
P1 (RED)
P2 (WHITE)
P3
TO PICK UP BLOCK
FCS
GND
TRK
LD·REF
MONITOR
LASER
D
C
B
A
Vcc
E
F
CURRENT REFERENCE
VOLTAGE REFERENCE
APC LD AMP
RF, I-V AMP
F, I-V AMP
E, I-V AMP
FOK AMP
EFM COMPA
AUTO ASYMMETRY CONTROL AMP
MIRROR COMPA. & AMP
TE AMP
FE AMP
E-F BALANCE
TRACKING GAIN
FOCUS GAIN
TP7 TRAKING GAIN
TP6 FOCUS GAIN
SPINDLE DRIVE
FOCUS DRIVE
TRACKING DRIVE
SLED DRIVE
SPINDLE MOTOR
SLED MOTOR
LOADING MOTOR
MECHA BLOCK
GOVERNOR PCB
P2042C5030
MAIN PCB P2037A501A
FOCUS PHASE COMPENSATION
WINDOW COMPARATOR
TRACKING PHASE COMPENSATION
OUTPUT DECODER
SEQUENCER
INPUT SHIFT REGISTER
ADDRESS DECODER
I2L DATA REGISTER
3.5V REGULATOR
VCO
LOOP FILTER
CLV LPF
B (POWER SUPPLY) LINE
SIGNAL LINE
TRACKING SERVO CONTROL LINE
FOCUS SERVO CONTROL LINE


IC4 CXD1135Q
IC3 CXP5058H-096Q
IC5 LC35178S-15
IC6 TC74HC08P
X1 16934.400kHz
SELECTOR
X'TAL CIRCUIT TIMING GENERATOR
EFM DEMODU-LATOR
INTER-POLATOR
DIGITAL FILTER
RAM ADDRESS GENERATOR
VCO CIRCUIT TIMING GENERATOR
FRAME SYNC DETECTOR/ PROTECTOR/ INSERTER
23-bit SHIFT REGISTER
ERROR DETECTOR/ CORRECTOR
DIGITAL OUT
CLV SERVO CONTROL
EFM PLL
CPU INTER-FACE
TRACKING COUNTER
SUB CODE SYNC DETECTOR
SUB CODE DEMODU-LATOR
SUB CODE Q REGISTER
AUTO ASYMMETRY CONTROL AMP
MIRROR COMPA. & AMP
EFM COMPA
FOK AMP
TE AMP
FE AMP
FOCUS OFF-SET
TRAKING GAIN
FOCUS GAIN
TRACKING GAIN
FOCUS PHASE COMPENSATION
TRACKING PHASE COMPENSATION
WINDOW COMPARATOR
OUTPUT DECODER
SEQUENCER
INPUT SHIFT REGISTER ADDRESS DECODER
I2L DATA REGISTER
3.5V REGULATOR
LOOP FILTER
VCO
CLV LPF
TO OPERATION PCB W404
TO OPERATION PCB W403
TO OPERATION PCB W402
TO OPERATION PCB W401
B (POWER SUPPLY) LINE
SIGNAL LINE
TRACKING SERVO CONTROL LINE
FOCUS SERVO CONTROL LINE
WARNING: ⚠ AND ▒ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY. REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS
AVERTISSMENT: ⚠ ET ▒, ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ, POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L' APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT



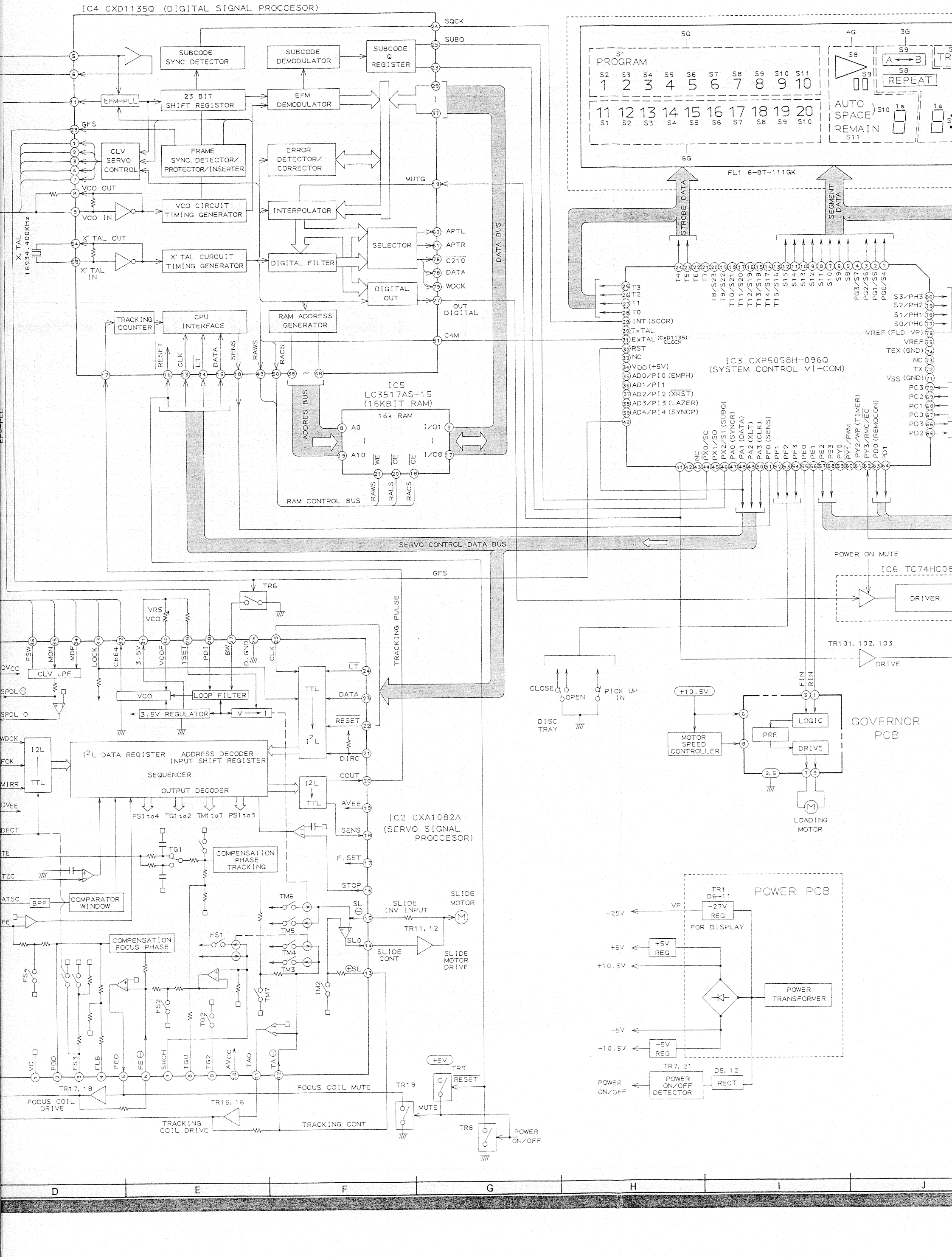
WARNING: ⚠ AND ▨ INDICATE SAFETY CRITICAL COMPONENTS FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURER'S RECOMMENDED PARTS

AVERTISSMENT: ⚠ ET ▨, ILS INDIQUENT LES COMPOSTANTS CRITIQUES DE SÉCURITÉ, POUR MAINTENIR LE DEGRÉ DE SÉCURITÉ DE L'APPAREIL, NE REMPLACER QUE DES PIÈCES RECOMMANDEES PAR LE FABRICANT

NOTE
UNLESS OTHERWISE SPECIFIED
ALL RESISTORS IN OHMS 1/6W (J)
ALL CAPACITORS IN μF 50WV (J)

CD-M959
MAIN & GORVERNOR PCB
SCHEMATIC DIAGRAM
NO. 2-2 P204202M

IC4 CXD1135Q (DIGITAL SIGNAL PROCCESOR)
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
EFM-PLL
23 BIT SHIFT REGISTOR
EFM DEMODULATOR
GFS
CLV SERVO CONTROL
FRAME SYNC DETECTOR/ PROTECTOR/INSERTER
ERROR DETECTOR/ CORRECTOR
VCO OUT
VCO IN
8.64M
VCO CIRCUIT TIMING GENERATOR
INTERPOLATOR
X' TAL OUT
X' TAL IN
X, TAL 16934.400KHz
X' TAL CURCUIT TIMING GENERATOR
DIGITAL FILTER
TRACKING COUNTER
CPU INTERFACE
RAM ADDRESS GENERATOR
RESET
CLK
LT
DATA
SENS
RAWS
RACS
ADDRES BUS
RAM CONTR
EFM
SLICE LEVEL CONT
CLV SERVO CONTROL BUS
EFM-PLL
WDCK (88.2k)
TR6
VR5 VCO
FSW
MON
MDP
LOCK
C864
3.5V
VCOF
1SET
PDI
BW
D.GND
CLK
DVCC
CLV LPF
SPINDLE MOTOR
SPINDLE INV INPUT
SPDL ⊖
SPDL ⊕
TR13, 14
SPINDLE MOTOR DRIVE
VCO
LOOP FILTER
3.5V REGULATOR
V → I
TTL
I²L
IC1 CXA1081 (RF AMPLIFIER)
WDCK
FOCUS OK
FOK
MIRR
DVEE
DFCT
TE
TZC
ATSC
FE
I2L
TTL
I²L DATA REGISTER
ADDRESS DECODER
INPUT SHIFT REGISTER
SEQUENCER
OUTPUT DECODER
FS1 to4
TG1 to2
TM1 to7
PS1 to3
FOK AMP
EFM COMPARATOR
AUTO ASYMMETRY CONTROL AMP
PICK UP
TR20
LASER DRIVE
LD
PD
APC AMP
APC PD AMP
LD
PD
A
B
C
D
E
F
+5V
A+C
B+D
F
E
RF, I-V AMP
RF, I-V AMP
F, I-V AMP
F, I-V AMP
RF SUMMING AMP
TRACKING ERROR AMP
F, I-V AMP
FOCUS ERROR AMP
VR1
E-F BALANCE
FOCUS COIL
TRACKING COIL
VR2 FOCUS OFF-SET
+5V
-5V
TRACKING GAIN
VR4
FOCUS GAIN
VR3
BPF
COMPARATOR WINDOW
COMPENSATION PHASE TRACKING
COMPENSATION FOCUS PHASE
TG1
TG2
FS1
FS2
FS3
FS4
TM1
TM2
TM3
TM4
TM5
TM6
TM7
VC
FGD
FS3
FLB
FEO
FE ⊖
SRCH
TGU
TG2
AVCC
TAO
TA ⊖
FOCUS
TRACKING
TR17, 18
FOCUS COIL DRIVE
TR15, 16
TRACKING COIL DRIVE


IC4 CXD1135Q (DIGITAL SIGNAL PROCCESOR)
SUBCODE SYNC DETECTOR
SUBCODE DEMODULATOR
SUBCODE Q REGISTER
EFM-PLL
23 BIT SHIFT REGISTOR
EFM DEMODULATOR
GFS
CLV SERVO CONTROL
FRAME SYNC. DETECTOR/ PROTECTOR/INSERTER
ERROR DETECTOR/ CORRECTOR
MUTG
VCO OUT
VCO IN
VCO CIRCUIT TIMING GENERATOR
INTERPOLATOR
X. TAL 16934.400KHz
X' TAL OUT
X' TAL IN
X' TAL CURCUIT TIMING GENERATOR
DIGITAL FILTER
SELECTOR
DIGITAL OUT
APTL
APTR
C210
DATA
WDCK
OUT DIGITAL
DATA BUS
TRACKING COUNTER
CPU INTERFACE
RAM ADDRESS GENERATOR
C4M
RESET
CLK
LT
DATA
SENS
RAWS
RACS
IC5 LC3517AS-15 (16KBIT RAM)
16k RAM
ADDRES BUS
A0
A10
I/O1
I/O8
WE
OE
CE
RAWS
RALS
RACS
RAM CONTROL BUS
SQCK
SUBO
SERVO CONTROL DATA BUS
IC3 CXP5058H-096Q (SYSTEM CONTROL MI-COM)
INT (SCOR)
TxTAL
ExTAL (CxD1135) CLOCK
RST
NC
VDD (+5V)
AD0/PI0 (EMPH)
AD1/PI1
AD2/PI2 (XRST)
AD3/PI3 (LAZER)
AD4/PI4 (SYNCP)
T3
T2
T1
T0
STROBE DATA
SEGMENT DATA
FL1 6-BT-111GK
PROGRAM
AUTO SPACE
REMAIN
REPEAT
A ↔ B
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
5G
6G
4G
3G
1a
PX0/SC
PX1/SO
PX2/S1 (SUBQ)
PA0 (SYNCR)
PA1 (DATA)
PA2 (XLT)
PA3 (CLK)
PF0 (SENS)
PF1
PF2
PF3
PE0
PE1
PE2
PE3
PY0
PY1/PWM
PY2/WP (TIMER)
PY3/RMC/EC
PD0 (REMOCON)
PD1
VREF (FLD VP)
VREF
TEX (GND)
NC
TX
VSS (GND)
PC3
PC2
PC1
PC0
PD3
PD2
POWER ON MUTE
IC6 TC74HC08
DRIVER
TR101, 102, 103
DRIVE
TRACKING PULSE
TR6
VR5 VCO
FSW
MON
MDP
LOCK
C864
3.5V
VCOF
1SET
PDI
BW
D.GND
CLK
DVCC
CLV LPF
SPDL ⊖
SPDL ⊕
VCO
LOOP FILTER
3.5V REGULATOR
V → I
TTL
I²L
LT
DATA
RESET
DIRC
COUT
AVEE
SENS
F.SET
STOP
SL
SL⊖
SL⊕
SLIDE INV INPUT
SLIDE MOTOR
TR11, 12
SLIDE CONT
SLIDE MOTOR DRIVE
WDCK
FOK
MIRR
DVEE
DFCT
TE
TZC
ATSC
BPF
COMPARATOR WINDOW
FE
I2L
TTL
I²L DATA REGISTER
ADDRESS DECODER
INPUT SHIFT REGISTER
SEQUENCER
OUTPUT DECODER
FS1to4
TG1to2
TM1to7
PS1to3
IC2 CXA1082A (SERVO SIGNAL PROCCESOR)
TG1
COMPENSATION PHASE TRACKING
COMPENSATION FOCUS PHASE
TM6
TM5
TM4
TM3
TM2
TM7
FS1
FS2
FS4
TG2
VC
FGD
FS3
FLB
FEO
FE⊖
SRCH
TGU
TG2
AVCC
TAO
TA⊖
TR17, 18
FOCUS COIL DRIVE
FOCUS COIL MUTE
TR15, 16
TRACKING COIL DRIVE
TRACKING CONT
TR19
MUTE
TR9
RESET
TR8
POWER ON/OFF
+5V
CLOSE
OPEN
PICK UP IN
DISC TRAY
+10.5V
MOTOR SPEED CONTROLLER
FIN
RIN
LOGIC
PRE
DRIVE
2.5
GOVERNOR PCB
LOADING MOTOR
POWER PCB
TR1
D6~11
-27V REG
FOR DISPLAY
VP
-25V
+5V REG
+5V
+10.5V
POWER TRANSFORMER
-5V
-10.5V REG
-10.5V
TR7, 21
POWER ON/OFF DETECTOR
D5, 12
RECT
POWER ON/OFF

G
H
I
J
K
1
2
3
4
5
6
7
8
5G
4G
3G
2G
1G
6G
PROGRAM
S2 S3 S4 S5 S6 S7 S8 S9 S10 S11
1 2 3 4 5 6 7 8 9 10
11 12 13 14 15 16 17 18 19 20
S1 S2 S3 S4 S5 S6 S7 S8 S9 S10
A ↔ B
REPEAT
TRACK
AUTO SPACE REMAIN
SEC
FL1 6-BT-111GK
STROBE DATA
SEGMENT DATA
REMO-CON DETECTOR
OPERATION KEY
TS1 ~ 24
PC
PD
KEY RETURN
KEY STROBE DATA
DATA BUS
IC3 CXP5058H-096Q
(SYSTEM CONTROL MI-COM)
SQCK
SUBO
MUTG
APTL
APTR
C210
DATA
WDCK
OUT DIGITAL
C4M
RST
INT (SCOR)
TxTAL
ExTAL (CxD1135) CLOCK
VDD (+5V)
VREF (FLD VP)
VREF
TEX (GND)
NC
TX
VSS (GND)
RAM
I/O1
I/O8
CE
RACS
SERVO CONTROL DATA BUS
GFS
POWER ON MUTE
IC6 TC74HC08P
DRIVER
OP1
OPTICAL OUT
TR101, 102, 103
DRIVE
SYNCRO REC
CLOSE
OPEN
PICK UP IN
DISC TRAY
+10.5V
MOTOR SPEED CONTROLLER
LOGIC
PRE
DRIVE
GOVERNOR PCB
LOADING MOTOR
SLIDE MOTOR
SLIDE INPUT
TR11, 12
SLIDE MOTOR DRIVE
POWER PCB
TR1 D6~11
VP
-27V REG
FOR DISPLAY
-25V
+5V REG
+5V
+10.5V
POWER TRANSFORMER
-5V REG
-5V
-10.5V
TR7, 21
POWER ON/OFF DETECTOR
D5, 12
RECT
POWER ON/OFF
TR9
RESET
TR19
MUTE
TR8
POWER ON/OFF
CD-M959
BLOCK DIAGRAM
NO. P204251M

ABBREVIATIONS (COMPACT DISC PLAYER)

ABBREVIATION	EXPLANATION	ABBREVIATION	EXPLANATION
A-D	Analog to Digital (Convertor)	Mb	Mega Bits
ADC	Analog to Digital (Convertor)	MDA	Motor Drive Amplifier
BCD	Binary Code Decimal	MFM	Modified Frequency Modulation
BPI	Bits per Inch	MM	Mono-stable Multivibrator
CD	Compact Disc	M^2FM	Modified Modified Frequency Modulation
CIRC	Cross Interleaving & Reed Solomon Coding	MOD2	Modulo 2 (Addition)
CLV	Constant Linear Velocity	MP	Microprocessor
CP	Clock Pulses	MSB	Most Significant Bit
CRCC	Cyclic Redundancy Check Codes	NA	Numerical Aperture
D Level	Decision Level	NRZ	Non Return to Zero
D-A	Digital to Analog (Convertor)	NRZ-I	Non Return to Zero Inverted
DAC	Digital to Analog (Convertor)	P	Parity Data
DAD	Digital Audio Disc	PAM	Pulse Amplitude Modulation
DEM	Dynamic Element Matching	PCM	Pulse Code Modulation
DPD	Differential Phase Detection	PD	Phase Detector
DSV	Digital Sum Value	PE	Phase Encode
EFM	Eight to fourteen Modulation	PLL	Phase Locked Loop
EX-OR	EXclusive OR	PNM	Pulse Number Modulation
FCI	Flux Changes per Inch	PPM	Pulse Phase Modulation
FIR	Finite Impulse Response	PWM	Pulse Width Modulation
FP	Front Pulse	Q	Parity Data
FPG	Front Pulse Gate	R,R_1,R_2, etc.	Data for Right Channel
f	Frequency of Sampling	RAM	Random Access Memory
GF	Galois Field	RPG	Rear Pulse Gate
H&V (Parity)	Horizontal & Vertical	SCOOP	Self Coupled Optical Pick-up
IIR	Infinite Impulse Response	S&H	Sample & Hold
kb	Kilo Bits	S/N	Signal to Noise Ratio
L,L_1,L_2, etc.	Data for Left Channel	SSG	Standard Signal Generator
LPF	Low Pass Filter	SYS CON	SYStem CONtrol
LSB	Least Significant Bit		